No. 5. — *Reports on the Scientific Results of an Expedition to Rain Forest Regions in Eastern Africa*

V

Reptiles

By Arthur Loveridge

CONTENTS

INTRODUCTION

The collection on which this report is based was made by the author, as a Fellow of the John Simon Guggenheim Foundation, with a view to elucidating the present-day distribution of the montane, sylvicoline fauna of certain mountains in eastern Uganda and Kenya Colony.

This subject will be dealt with in the concluding contribution to the series of reports, in a paper which will also contain the itinerary and full information regarding localities and altitudes.

The period of collecting was from November 8, 1933, to July 9, 1934, during which time 2,280 reptiles representing 123 species were preserved. This total, which excludes certain species received as a gift, comprises 1 species of crocodile, 5 of tortoises and turtles, 57 of snakes, 50 of lizards and 10 forms of chameleons. In all 18 of these and 1 genus were new to the collections of the Museum of Comparative Zoölogy,

but a dozen others were previously represented by only 1 or 2 examples sometimes with poor data.

One might single out for special mention such rarities as: *Leptotyphlops boulengeri, Mehelya nyassae, Chamactortus a. aulicus, Rhamphiophis rubropunctatus, Micrelaps bicoloratus, Bunocnemis modestus, Lygodactylus f. scheffleri, Geocalamus acutus, Eremias neumanni, Mabuya irregularis, Chameleon tavetensis.* Five of these were known previously only from the type. In all, topotypes of more than a score of species were collected.

Originally I had planned to visit the Sokoki Forest, on the coast south of Malindi. As, however, that veteran collector and well-known naturalist, Mr. H. J. Allen Turner, camped there in June, 1932, I availed myself of his typically generous offer to work over the herpetological material (now in the Coryndon Memorial Museum, Nairobi) which he had secured. The resulting locality records are included under the heading "Distribution," but his specimens do not figure in the statistics given above.

ACKNOWLEDGMENTS

I should like to take this opportunity to express my gratitude to the John Simon Guggenheim Memorial Foundation for the grant which made the expedition possible. Also to Dr. Thomas Barbour, of the Museum of Comparative Zoölogy, for the interest and encouragement he has given in furthering the prosecution of this work.

As before, I am indebted to Doctors Joseph Bequaert and J. H. Sandground of the Harvard School of Tropical Medicine for identifying the ecto- and endoparasites recorded in the following pages. My entomological colleague, Mr. Nathan Banks, has been most kind in determining the more difficult remains of insects which figured in the stomach contents of these reptiles.

Many herpetologists and others have aided by answering questions, making comparisons with types in their care, and in other ways. Due appreciation is expressed in the text, but I may mention here that Messrs. E. R. Dunn, Malcolm A. Smith, H. W. Parker, C. R. S. Pitman, K. P. Schmidt, O. G. Stull-Davies and V. G. L. van Someren have all assisted at one time or another during the writing up of these notes.

Lastly, but by no means least, I am grateful to my wife for taking all the photographs used to illustrate this paper. Many were taken under trying conditions of heat, tropical glare, and often with restless reptilian subjects.

ADDITIONS TO THE FAUNA

As a result of this study, the following species, or races, collected on the expedition, have been described for the first time:

Testudo pardalis babcocki, Mount Debasien, Uganda.
Typhlops kaimosae, Kaimosi, Kenya Colony.
Coronella semiornata fuscorosea, Mount Mbololo, Kenya Colony.
Aparallactus turneri, Sokoki Forest, Kenya Colony.
Dendraspis jameson kaimosae, Kaimosi, Kenya Colony.
Cnemaspis africanus elgonensis, Sipi, Mount Elgon, Uganda.
Hemidactylus mandensis Kitau, Manda Id., Kenya Colony.
Lygodactylus picturatus mombasicus, Kilindini, Mombasa Id., Kenya Colony.
Agama agama kaimosae (see below), Near Kaimosi, Kenya Colony.
Riopa mabuiiformis, Ngatana, Tana River, Kenya Colony.
Riopa tanae, Kau, Tana River, Kenya Colony.
Acontias percivali, Foot of Mount Mbololo, Kenya Colony.
Chamaeleon bitaeniatus altaeelgonis, Kaburomi, Mt. Elgon, Uganda.

In addition to these new forms, the undermentioned are recorded from Uganda or Kenya Colony for the first time:

New for Uganda

Chlorophis carinatus Andersson, of Cameroons.
Cnemaspis quattuorseriatus (Sternfeld), of Ruanda.
Algiroides alleni Barbour, of Kenya Colony.
Eremias spekii sextaeniata Stejneger, of Kenya Colony.
Mabuya irregularis Lönnberg, of Kenya Colony.

New for Kenya Colony

Kinixys spekii Gray, of "Central Africa."
Typhlops pallidus (Cope), of Zanzibar.
Leptotyphlops longicauda (Peters), of Mozambique.
Mehelya nyassae (Günther), of Nyasaland.
Chlorophis carinatus Anderson, of Cameroons.
Coronella coronata (Schlegel), of the Gold Coast.
Prosymna ambigua stuhlmanni (Pfeffer), of Tanganyika Territory.

Aparallactus uluguruensis Barbour and Loveridge, of Tanganyika Territory.
Zonurus tropidosternum Cope, of Tanganyika Territory.
Eremias neumanni Tornier, of Ethiopia.

The genera Prosymna and Zonurus have their ranges extended northwards into Kenya, though the former is known to occur in British Somaliland.

SUMMARY OF TAXONOMIC ALTERATIONS

The following subspecies are revived from the synonymy of their respective species:

Prosymna ambigua stuhlmanni, (Pfeffer).
Lygodactylus fischeri scheffleri, Sternfeld.
Mabuya quinquetaeniata obsti, Werner.

Parker was correct in treating *Riopa modestum* as a full species, and I was in error in assuming it to be a race of *R. sundevallii* (Smith). *Chamaeleon tavetensis* Steindachner becomes a race of *fischeri*.

The undermentioned are considered to be synonyms:

Kinixys jordani Hewitt	= *Kinixys spekii* Gray
Pelusios sinuatus zuluensis Hewitt	= *Pelusios sinuatus* (Smith)
Pelusios sinuatus leptus Hewitt	= *Pelusios sinuatus* (Smith)
Typhlops boulengeri Bocage	= *Typhlops p. punctatus* (Leach)
Glauconia braueri Sternfeld	= *Typhlops braminus* (Daudin)
Meizodon regularis Fischer	= *Coronella coronata* (Schlegel)
Coronella regularis praeornata Angel	= *Coronella coronata* (Schlegel)
Coronella semiornata mossambicae Cott	= *Coronella s. semiornata* Peters
Scaphiophis calciatii Calabresi	= *Scaphiophis raffreyi* Bocourt
Rhinocalamus meleagris Sternfeld	= *Micrelaps bicoloratus* Sternfeld
Aparallactus concolor boulengeri Scortecci	= *A. uluguruensis* Barb. & Love.
Dendraspis sjöstedtii Lönnberg	= *Dendraspis angusticeps* (Smith)
Agama agama turuensis Loveridge	= *Agama agama elgonis* Lönnberg
Agama agama kaimosae Loveridge	= *Agama planiceps caudospinosa* Meek
Zonurus parkeri Cott	= *Zonurus tropidosternum* Cope
Euprepes (*Euprepis*) *taitanus* Peters	= *Mabuya planifrons* (Peters)
Ablepharus carsonii Boulenger	= *Ablepharus wahlbergii* (Smith)

*LIST OF SPECIES COLLECTED**

*Species in parentheses are discussed, though not collected.

Systematic List of Species Collected

CROCODYLIDAE

Crocodylus niloticus Laurenti

Crocodylus niloticus Laurenti (part), 1768, Syn. Rept., p. 53: "Habitat in India orientali, et Aegypto."

2 (M. C. Z. 40001–2) between Kau and Kipini, K. C. 7.v.34.

Native name. *Ngwena* (Kipokomo).

Measurements. Snout to anus 550 and 510 mm., tail 565 and 540 mm., hind limb 207 and 202 mm., weight 10 and 8 lbs. A third example weighed 13 lbs.

Diet. These young crocodiles had been kept in captivity for some years and were fed upon fish and meat in a tank at Lamu. I was asked to shoot them as they were snapping at their native custodian who had become afraid of them. A shot with a .22 bullet at close quarters killed them instantly and did not injure the slate bottom of their tank.

The Wapokomo told me that when the Tana is in flood the crocodiles get plenty of fish and consequently do not carry off so many humans as at other seasons. Nevertheless, just before my arrival at Ngau, a native, who had been standing six feet from the water's edge up-river, was seized by the leg by a crocodile which dashed out of the water and dragged him back into the river. Fortunately for the man, he retained hold of his spear, and by stabbing the reptile three or four times persuaded it to let go its hold. The man, with his leg badly mangled, was still in the mission hospital at Ngau. I was also told that the previous year a crocodile had risen from the water and snapped at the arm of an Englishman who was descending the river in a dugout; the reptile only succeeded in tearing away the man's sleeve.

Parasites. None.

Enemies. An Mpokomo informed me that when the river subsides his people organize hunts and spear many scores of crocodiles in the course of a day, usually a few monsters but the majority of small size. In former years a Mpokomo youth had to kill a crocodile before he could marry. They claim to eat all of the reptiles except the bones and skin of the back. I expressed doubts as to their being able to eat the skin of the belly, but was told that after boiling it for a long time they chewed off pieces and swallowed them.

Six vultures (*Necrosyrtes m. monachus*) gathered about the carcasses

of the three crocodiles skinned at Lamu, but for some unfathomed reason refused to touch them. The boys suggested that it was because they smelled like fish.

TESTUDINIDAE

Kinixys spekii Gray

Kinixys Spekii Gray, 1863, Ann. Mag. Nat. Hist. (3), **12**, p. 381: Central Africa (*i.e.* Tanganyika Territory east of the lakes).

Kinixys jordani Hewitt, 1931, Ann. Natal Mus., **6**, p. 482, pl. xxxvii, figs. 7–9 (not figs. 1–3 as stated in text): Isoka, Northern Rhodesia.

♂ & Young (M. C. Z. 40007–8) Kibwezi, K. C. 23–28.iii.34.
2 ♂ 6 ♀ (M. C. Z. 40009–16) Voi, K. C. 9–13.iv.34.
♂ (M. C. Z. 40017) Golbanti, K. C. 22.vi.34.

Native names. *Nguru* (Kisagalla and Kitaita); *fudi* (Kipokomo).

Variation. We have in the Museum of Comparative Zoölogy a ♂ and ♀ box tortoise from Simbo a few miles north of Tabora (Unyanyembe), Unyamwezi, Tanganyika Territory. These may well be considered as topotypes of *spekii* coming as they do from a village on the probable route which Speke took when he first descried Lake Victoria.

When encountered, I was struck by their depressed appearance and planned describing them as distinct from *belliana* with which I was familiar. I took the precaution, however, of first submitting them to the British Museum. I was then informed by the late Miss J. Procter that they were within the range of variation of *belliana* to the synonymy of which Boulenger had already referred the injured type of *spekii*. I therefore discussed them (Loveridge, 1923, p. 924) under the name of *belliana* as a depressed form inhabiting the arid thorn-bush country as opposed to *belliana* with a more vaulted carapace living in the grassy steppes.

More recently Hewitt (1931, *loc. cit.*) described five new members of the genus from South Africa. Two as races of *belliana*, three as species of the depressed (*i.e. spekii*) group. He very kindly sent me a paratype of *jordani* which so closely resembles the ♂ topotype of *spekii* that I have no hesitation in referring it to the synonymy of that form. Hewitt mentions a specimen from "Gatta Plain, British East Africa" (*i.e.* Yatta Plain, Kenya Colony), which he says resembles *jordani* and *australis*, but differs in certain ways which he enumerates. His later (1935, p. 347) remarks are rendered nugatory by the second Simbo specimen.

First let us reduce the vague terms "slightly flattened," "more depressed" to actual percentages of greatest height contained in greatest length. In most of the series it was possible to take these by placing the tortoise between two blocks. Arranging our material from south to north we find:—

M. C. Z. 33450 paratype shell of *jordani*.	Height 2.6	times in the length
M. C. Z. 18154–5 ♂, ♀ topotypes of *spekii*.	" 2.4	"
M. C. Z. 40009–16 being 2 ♂, 6 ♀ from Voi.	" 2.3–2.5	"
M. C. Z. 40017 a young ♂ from Golbanti.	" 2.2	"
M. C. Z. 40007–8 young and ♂ from Kibwezi.	" 2.2–2.4	"
M. C. Z. 8158 a juvenile ♀ from Ithanga Hills.	" 2.0	"

Sex has no bearing on this variation in height in relation to length but age is very obviously a factor for all the four instances of 2 to 2.2 times the data is based on juveniles which are under 100 mm. in length while all the rest of our series are 100 mm. or over and furnish a ratio of 2.3 to 2.6 times for height included in length.

The width of the nuchal may be included in the width of the adjacent marginal from 3¼ (M.C.Z. 40010) to 7 (M.C.Z. 40015) times *in the Voi series alone.*

Great extremes of variation in the amount of projection of the gulars in females is shown.

Marginal VI is narrowly in contact with the inguinal in the paratype of *jordani* (M.C.Z. 33450), topotypes of *spekii* (M.C.Z. 18154–5), Ithanga Hills specimen (M.C.Z. 8158) but only in one of the Voi series (M.C.Z. 40014). In all others it is broadly in contact.

The anal suture may be only half the length of the femoral suture (M.C.Z. 40017) or three times as long (M.C.Z. 40013). In the topotypic pair of *spekii* alone it is much longer or much shorter!

My conclusion, therefore, is that the characters on which the alleged species *jordani*, *australis* and *youngi* were based are subject to infinite variation. I definitely refer *jordani* to the synonymy of *spekii* and imagine that when a good series of topotypic *australis* and *youngi* are available it will be found that they cannot be maintained as distinct.

Coloration. The plastrons of the *spekii* topotypes as well as that of the *jordani* paratype exhibit well-defined hollow squares of black pigmentation corresponding to the contours of the shields, evidently of little consequence as differing somewhat from the types of *jordani* as described by Hewitt. In the Kibwezi, Voi and Golbanti tortoises this definite marking is obsolescent though indicated by fragmentary

markings of a deep black tone. The juvenile female from the Ithanga Hills has traces of a stellar pattern in the black markings of its plastron. The rich pattern of the carapace is so variable in the females, often only dull olive in the males, that it can serve no useful purpose to describe it here.

Measurements. Largest ♂ (M.C.Z. 40007) measures 150 mm. in total length, 62 mm. in height; largest ♀ (M.C.Z. 40011) measures 180 mm. in length, 72 mm. in height. Smallest tortoise (M.C.Z. 40008) measures 53 mm. and 24 mm. respectively.

Sex. Males may be readily distinguished by their slightly concave plastrons and their very long tails.

Diet. A male was observed feeding beside the road at 10 a.m. in bright sunshine. On being approached, he turned and made off into the bush with surprising agility.

Testudo pardalis babcocki Loveridge

Plate 1, figs. 1 and 2

Testudo pardalis babcocki Loveridge, 1935, Bull. Mus. Comp. Zoöl., **79**, p. 4: Mount Debasien, Karamojo, Uganda.

Type ♀ (M. C. Z. 40003) Mt. Debasien, U. 23.xi.33.
♀ & young (M. C. Z. 40004–5) Mt. Mbololo, K. C. 17.iv.34.
8 eggs (M. C. Z. 40018) Mt. Mbololo, K. C. 17.iv.34.
♂ (M. C. Z. 40006) Wema, Ngatana, K. C. 17.vi.34.

Distribution. This species has also been taken at Kaimosi by Heller.

Affinities. In 1933 Hewitt proposed separating this species from Testudo under the name Megachersine.

Native names. Akuma (Karamojong); *ikudu* (Lugishu); *Likudu* (Luragoli and Lutereki); *nguru* (Kitaita, but not specific).

Measurements. Greatest length of ♂ (M.C.Z. 40006) 238 mm., of ♀ (M.C.Z. 40004) 385 mm., and of young (M.C.Z. 40005) 58 mm.

Breeding. From the oviducts of the female taken on Mt. Mbololo, April 17, 1934, I removed and blew eight eggs. These eggs measured 38 x 36 mm. in diameter and were noticeably larger than the seven eggs, measuring 35 x 32.5 mm., laid on May 21, 1922 by a tortoise from Pwaga, Tanganyika Territory (*vide* Loveridge, 1923, p. 927). In addition to the eggs removed there were the usual developing ova of various sizes in the ovaries.

Parasites. Ticks (*Amblyomma exornatum*) were removed from the neck and limbs of the Mt. Mbololo and Wema tortoises.

Enemies. In addition the latter had very many heads of *siafu* or soldier ants (*Dorylus nigricans* subsp.) attached to it.

From the shell of the big Mbololo female, it would appear as if a hyena or other carnivore had attempted to crack the shell by biting it when the reptile was of smaller size. The carapace has an injured area on its summit while the plastron has a corresponding mark where it has been perforated (by a canine?). It is interesting to note how the hole has been repaired from the inside by a bony growth, parallelling the repairs carried out on an oyster shell by its occupant.

Habitat. The Debasien tortoise was taken among rocks on an arid ridge or spur of the mountain at an altitude of 5,000 feet. The young Mbololo specimen was found at 4,000 feet, the adult rather lower down the mountain. The Wema reptile was inhabiting the plains fringing the north bank of the Tana River which could not have been more than 1,000 feet above sea level. The name of Leopard Tortoise, therefore, seems preferable to Mountain Tortoise by which it is sometimes known in South Africa.

Testudo tornieri Siebenrock

Testudo tornieri Siebenrock, 1903, Ak. Wiss. Wien, Math.-nat. Klasse, **24**, p. 185: "Bussisia" *i.e.* Busisi, Tanganyika Territory.

1 young (Nairobi Mus.) Sokoki Forest, nr. Malindi, K. C. (H.J.A.T.) 1932.

Distribution. This specimen, which I examined when passing through Nairobi, constitutes a most interesting extension of range for the soft-shelled land tortoise. On October 14, 1934, Mr. Allen Turner wrote to me stating that this specimen "was caught by a boy while cleaning round his rice plants about a hundred yards from my camp at the top of Mida Creek about ten miles south of Malindi." This unusual habitat for a species usually associated with rocky hills in arid regions, is also quite a surprise.

CHELONIIDAE

Chelonia mydas (Linnaeus)

Testudo mydas Linnaeus, 1758, Syst. Nat. ed. **10**, p. 197: Ascension Island, Atlantic Ocean.

Testudo japonica Thunberg, 1787, Sven. Vet.-Akad. Handl., **8**, p. 178, pl. vii: Japan.

♂ (M. C. Z. 40019) Lamu, Lamu Id., K. C. 7.v.34.

Native name. *Kasa* (Kiamu.)
Measurements. Length over all of carapace 710 mm.
Diet. Stomach full of sea grass but free of parasites.

PELOMEDUSIDAE

Pelusios sinuatus (Smith)

Sternothaerus sinuatus A. Smith, 1838, Illus. Zoöl. S. Africa, **3**, pl. i: South Africa, "in rivers to the north of 25° S. latitude." (*i.e.* region of the headwaters of the Limpopo River.)
Pelusios sinuatus zuluensis Hewitt, 1927, Rec. Albany Mus., p. 360, pl. xx, figs. 1–3, text fig. ld: near Umsinene River, Zululand.
Pelusios sinuatus leptus Hewitt, 1933, Occ. Pap. Rhodesian Mus., p. 1, pl. ix, fig. 1: Isoka, northeast Northern Rhodesia.

♀ ♀ (M. C. Z. 40020, 40050) Tsavo River, K. C. 2–3.iv.34.

Variation. These two large terrapin, taken from the river at almost the same spot, exhibit striking variation in almost every character which Hewitt thought to be of importance in differentiating the race *zuluensis*. They bear out my previous observations (Loveridge, 1929, p. 15 and 1933, p. 208) based on material from Ujiji, Tanganyika Territory and Mount Chirinda (Selinda), Southern Rhodesia.

The more important variations of the Tsavo females are as follows. Vertebrals I to IV exhibit a protruberance (M.C.Z. 40020) or are perfectly smooth (40050); vertebrals II to IV are much longer than broad (40020) or as long as broad or very slightly longer (40050); outer border of the pectoral is shorter than that of the humeral (40020) or the outer border of the pectoral is longer than that of the humeral (40050); the intergular is not twice as long as broad (40020, whose intergular is 37 mm. long, 26 mm. broad) or the intergular is more than twice as long as broad (40050, whose intergular is 37 mm. long, 15 mm. broad); the lateral gulars very small, the anterior edge of one (9 mm.) being included at least 2½ times in that (24 mm.) of the intergular (40020) or the lateral gulars relatively large, the anterior edge of one (11 mm.) being included less than 1½ times in that (15 mm.) of the intergular (40050); the sides may be steeply sloping (40020) or more gradually so (40050); the relative lengths of the claws of the hind feet, being subject to growth and wear, is not comparable on the right and left feet of either terrapin.

Coloration. The plastron of the smaller has the characteristic yellow

centre sharply defined from the black border; in the larger specimen the juncture of the two colors is blurred.

Measurements. M.C.Z. 40020 measures 285 mm. in outside length of shell, 95 mm. in greatest depth. The smaller terrapin measures 227 mm. in length and 80 mm. in depth. This gives a depth into length of 3 and 2.8 times respectively, the four young specimens from Tanganyika and Southern Rhodesia ranged from 80 to 88 mm. in length in which the depth was included from 2.4 to 2.5 times.

Pelusios nigricans nigricans (Dondorff)

Plate 2, figs. 1 and 2

Testudo nigricans Dondorff, 1798, Zoöl. Beytr. des Linn. natur., **3**, p. 34: Type locality unknown.

34 (M. C. Z. 40021–40049) Kaimosi, K. C. 13.ii–10.iii.34.

Native names. Likudu (Luragoli); *lihodu* (Lutereki).

Variation. This long series was secured to see if any embraced the proportions of *P. n. castanoides* Hewitt which was based on a single individual from Richard's Bay, Zululand. This type measured 225 mm. in length and 98 mm. in height, giving a height into length of 2.2. times. While the Kaimosi series actually ranges from 2.17 to 3.30 times this is inconclusive for it is only a 100 mm. terrapin that furnishes the low figure and a 248 mm. specimen that is 3.30 times; a 225 mm. example (No. 40025) has a height of only 75 mm. giving a height into length of 3 times as against 2.2 times in Hewitt's type of *castanoides.* In passing, a few further remarks on the results of measuring these 34 terrapin might be added. Taking the eight largest males (151 to 240 mm.) and eight largest females (168 to 252 mm.) no appreciable difference is found in the ratio of height into length or breadth into length. On the other hand there is a very marked age difference in these proportions, thus

	8 *young*	8 *males*	8 *females*
Height is included in the length	2.1–2.4	2.5–3.0	2.7–3.1
Breadth is included in the length	1.2–1.4	1.4–1.5	1.3–1.5

The breadth of *castanoides* was 146 mm., giving a ratio of 1.54 times which can be matched by several of our series of a comparable length.

Hewitt (1931, p. 466) is correct in stating that the intergular shield is pear-shaped and longer than the inner border of the humeral in East African *nigricans.* I notice that the intergular is flat in our

examples of *P. n. rhodesianus* while it is rounded or embossed in these Kaimosi specimens, especially noticeable in the younger individuals. The intergular is always longer than the inner border of the humeral, in 14 reptiles it equals the united lengths of the inner border of humeral and pectoral, in 16 it is even longer, in only 3 is it shorter, 1 terrapin is damaged.

On the other hand, I fail to see that "outer border of femoral strongly arched" is of any diagnostic significance as against "moderately arched" in *castanoides*, or "slightly arched" in *castaneus* (which I treat as a synonym of *nigricans*). The range of variation in this character in the Kaimosi series is enormous and must be seen to be appreciated. They do differ in this character from our examples of *rhodesianus* where they are "not definitely arched."

The outer border of the pectoral is shorter than the outer border of the humeral in 24 specimens, is equal to it in 10, so that, as I have remarked elsewhere, (Loveridge, 1933, p. 209) this key character for distinguishing *sinuatus* and *nigricans* is useless.

Since the foregoing was written, Hewitt (1935, p. 345) has decided to make *rhodesianus* a full species, because he has seen an example of it from Entebbe, Uganda, where *nigricans* is common. The greater probability is that *rhodesianus* is a synonym of *nigricans*.

Coloration in life. Underside of a 30 mm. young one. Throat spotted with pink. Plastron peripherally blotched with red alternating with the general black ground color; marginals red and black.

Measurements. Largest ♂ measures 240 mm. in length of shell; biggest ♀ measures 252 mm.; smallest specimen 30 mm.

Breeding. The youngest terrapin alluded to above, was taken on March 1 and appeared to have recently hatched as its abdominal shields were still unhealed.

Diet. Crab's (Potamon sp.) claws and grass occurred in the faeces.

Parasites. Leaches (some have been preserved) were commonly found upon these terrapin.

Enemies. Two terrapin (M.C.Z. 40033, 40035) appeared to have been bitten by hyenas or some other carnivore when younger (both measure 167 mm. in length), one having a piece apparently taken out of its side.

Habits. On February 13 the first rain for months fell between 4.30 and 5.30 p.m. The following morning the first of these reptiles was brought in by a native. Its back caked with mud from which it seemed obvious that the creature had been aestivating. Several others were brought in subsequent to other showers.

When hunting frogs at night with an electric torch, I discovered several of the largest in the series lying in shallow water at the edge of the mill pond, these were successfully netted. Attempts to capture them by setting a turtle trap in the outlet of the mill pond, proved abortive.

Pelomedusa galeata (Schoepff)

Testudo galeata Schoepff, 1792, Hist. Testud., p. 12, pl. iii, fig. 1: "Habitat in India orientale, Carolina."

3 (M. C. Z. 40051–3) Kirui's village, Kitosh, K. C. 25.i.34.
6 (M. C. Z. 40054–9) Voi, Seyidie Province, K. C. 22.iv.34.

Native name. *Nguru* (Kitosh, but not specific).

Measurements. Largest specimen (M.C.Z. 40055), apparently a female, measures 142 mm., the smallest (M.C.Z. 40053) only 60 mm.

Habitat. The Voi series were taken in a watercourse after a heavy downpour, one of several erratic showers inaugurating the rainy season after a prolonged drought.

TYPHLOPIDAE

Typhlops punctatus punctatus (Leach)

Acontias punctatus Leach, 1819, in Bowdich, Miss. Ashantee, p. 493: Fantee, Gold Coast.

Typhlops Boulengeri Bocage, 1893, Jorn. Sci. Lisboa (2), **3**, p. 117: Quindumbo, interior of Benguela, Angola.

Synonymy. As I failed to secure any Typhlops on Mount Elgon, Dr. H. Rendahl of the Royal Swedish Museum, Stockholm, was kind enough to send me for study, the specimen No. 2580, taken on the eastern slopes at about 6,500 feet, by Dr. Hugo Granvik, and referred to as "*Typhlops boulengeri* Bocage?" by Lönnberg (1922, p. 7).

This snake has 29 (not 28) midbody scale-rows; its prefrontal is not more than twice as large as its supraocular, the latter forming a very broad suture with the nasal. Its length is 264 (257 + 7) mm., and diameter 11 mm., the latter being included in the former 24 times. All these are characters of *punctatus*.

I consider, however, that *boulengeri* was based on young (180 to 260 mm.) specimens of *punctatus* in which the prefrontal was slightly developed at the expense of the supraocular. As has been shown elsewhere (Loveridge, 1933, p. 218) in regard to another species, a

more rounded snout is characteristic of the young, the obtusely horizontal edge being a secondary character developed to facilitate burrowing.

Typhlops kaimosae Loveridge

Typhlops kaimosae Loveridge, 1935, Bull. Mus. Comp. Zoöl., **79**, p. 5: Kaimosi, Nyanza Province, Kenya Colony.

Holotype (M. C. Z. 40060) Kaimosi, K. C. 7.iii.34.

Native names. Inanyanza (Luragoli); *mutumbo* (Lutereki).

Diagnosis. Distinguished by the preocular being separated from the upper labials by the ocular forming a broad suture with the nasal beneath it. No other East African Typhlops presents such an arrangement.

Typhlops schlegelii mucruso (Peters)

Onychocephalus mucruso Peters (part), 1854, Monatsb. Akad. Wiss. Berlin, p. 621: Maçanga (*i.e.* Makanga), Mozambique.

Typhlops mandensis Stejneger, 1893, Proc. U. S. Nat. Mus., **16**, p. 725: Wange, on mainland *opposite* Manda Island, Kenya Colony.

1 (M. C. Z. 40061) Peccatoni, K. C. 24.v.34.
2 (M. C. Z. 40062–3) Mkonumbi, K. C. 28.v.34.
2 (M. C. Z. 40064–5) Near Witu, K. C. 31.v.34.
3 (M. C. Z. 40066–8) Ngatana, K. C. 14.vi.34.
1 (M. C. Z. 40069) Gongoni, K. C. 27.vi.34.

Distribution. Also 3 from Sokoki Forest (H.J.A.T.).

Native name. Nyoka vishwa viwili (Kipokomo).

Synonymy. I suspect that Gunther's (1894, p. 87) record of *T. punctatus* from Mkonumbi was based on a juvenile *mucruso* with rounded snout.

Variation. T. mandensis was based on an individual about to slough resulting in the eyes being hidden, this is the case with the Peccatoni and Gongoni snakes. Lake Peccatoni lies about forty miles south of Wange. A detailed discussion on the synonymy of *mucruso* has recently been given (Loveridge, 1933, pp. 216–219).

The nine snakes listed above have: Midbody scale-rows 30–34 (average 32.6); the rostral as seen from above is a little longer than broad in both adult and young; the eye, when visible, is beneath the ocular against the suture between ocular and preocular; the nasals are separated behind the rostral; the nasal suture rests on the first

labial, and not on the second labial which is the distinguishing character of *T. brevis* Scortecci from Kismayu, two hundred miles to the north.

Coloration in life. Young. Above, blue gray, each scale edged laterally with black which results in a lineolate appearance. Below, pinkish white. Adult. Above, black, the centre of each scale with a small buff spot. Below, buff. Numbers 40061 and 40069, being about to slough, are: Above, pale silvery gray or white. Below, pinkish white. In life the Gongoni reptile was noted as being white, or slightly bluish white.

Measurements. Largest snake (M.C.Z. 40064) measures 447 (440 + 7) mm. Diameter at midbody 15 mm. Smallest snake (M.C.Z. 40062) measures 135 (133 + 2) mm. Diameter 5 mm. Diameters included in lengths from 27 to 33 times.

Typhlops unitaeniatus unitaeniatus Peters

Typhlops (*Letheobia*) *unitaeniatus* Peters, 1878, Monatsb. Akad. Wiss. Berlin, p. 205, pl. ii, fig. 5: Taita, Kenya Colony.

2 (M. C. Z. 40079–80) Voi, Taita, K. C. 12.iv.34.
1 (M. C. Z. 40081) Malindi, K. C. 28.vi.34.

Distribution. Voi being at the foot of the Taita Mountains, the specimens from there may well be considered topotypes. Another snake from Kibwezi, K.C. (M.C.Z. 18175) has been utilized for these remarks.

Native name. Ngomo (Kisagalla).

Variation. Midbody scale-rows 22–24; eye, when visible, is beneath the nasal; diameter is included in the length from 61 to 76 times.

Coloration in life. The dorsal band is a beautiful mustard yellow, in sharp contrast to the jet black of the rest of the body.

Measurements. The largest snake (M.C.Z. 18175) measures 380 (376.5 + 3.5) mm. Diameter at midbody 5 mm.

Diet. Termites in the Kibwezi snake, apparently termites in the Malindi specimen.

Typhlops pallidus (Cope)

Letheobia pallida Cope, 1868, Proc. Acad. Nat. Sci. Philad., p. 322: Zanzibar.

4 (M. C. Z. 40075–8) Ngatana, K. C. 14.vi.34.

Distribution. Originally described from Zanzibar, later reported from Pemba Island, the above series from the Tana River constitute

the first record from the mainland. They have been carefully compared with a topotype collected at the same time as the type.

Variation. Midbody scale-rows 22; diameter included in total length 51–73 times (50 in Pemba, 58–60 in Zanzibar specimens); tail into total length 58–98 times, one might suggest possibly 58–64 in males and 92–98 for females but the material is unsexed.

Measurements. The largest (M.C.Z. 40075) measures 185 (183 + 2) mm. It is interesting to note that a snake measuring 152 mm. when just killed, now measures only 147 mm., others measured in the field have contracted in the same way.

Habitat. Under vegetable debris heaped along banks of a rice swamp as described under *Leptotyphlops longicauda.*

Typhlops braminus (Daudin)

Eryx braminus Daudin, 1803, Hist. Nat. Rept., **7**, p. 279: Bengal, India.
Glauconia braueri Sternfeld, 1910, Mitt. Zoöl. Mus. Berlin, **5**, p. 69: Bagamoyo, Tanganyika Territory.

Sternfeld based his description of *Glauconia braueri* on a very small snake of 83 mm., which he later amended to 85 mm. The original description was exceedingly brief and did not even state the number of midbody scale-rows. Later the same year, however, in his "Die Schlangen Deutsch-Ostafrikas" (1910, p. 13) he gave the number as 14 which definitely placed the reptile among the Leptotyphlops (Glauconia *auct.*).

Its short tail separated it from all East African Leptotyphlops and agreed rather with the genus Typhlops. This aroused my suspicions so I asked my friend, Mr. Karl P. Schmidt, who was visiting Berlin at the time, if he would kindly reëxamine the type. He replied that the tail measurements were correct, but that the midbody scale-rows numbered 20! There is therefore no difference between *braueri* and *braminus,* the latter long known from the East African coast, though rare. It was long ago described from South Africa by Sir A. Smith under the name of *Onychocephalus capensis.*

Typhlops lumbriciformis (Peters)

Onychocephalus (*Letheobia*) *lumbriciformis* Peters, 1874, Monatsb. Akad. Wiss. Berlin, p. 377: Zanzibar coast.
Typhlops kleebergi Werner, 1904, Zoöl. Anz., **27**, p. 464: Usambara, Tanganyika Territory.

1 (M. C. Z. 39951) Sokoki Forest, K. C. vi.32. H.J.A.T.
1 (M. C. Z. 40070) Mkonumbi, K. C. 30.v.34.
1 (M. C. Z. 40071) Gongoni, K. C. 27.vi.34.
3 (M. C. Z. 40072–4) Malindi, K. C. 29.vi.34.

Distribution. All these specimens were taken on the coast between Lamu and Mombasa and are therefore topotypes in the sense that this region formed part of the Zanzibar coast. As Hildebrandt collected the types it is more probable that they came from nearer Mombasa.

Variation. Midbody scale-rows 18; eyes hidden, but the pigment may be detected beneath the nasal in some; preocular in contact with the 2nd and 3rd upper labials; ocular very small; snout with sharp horizontal edge; diameter is included in the length from 70 to 83 times.

If one regards the preocular as the ocular scale, the most natural thing to do as the eye is beneath the nasal, and the real ocular is scarcely enlarged, then the above series agree with the description of *kleebergi* in every detail except that the diameter of the type was included 56 times in the total length.

Boulenger (1915, p. 615) referred *kleebergi* to the synonymy of *lumbriciformis.* Barbour & Loveridge (1928, p. 104) revived it on account of the very obvious differences between the description of *kleebergi* and that given for *lumbriciformis* by Boulenger (1893, p. 55). The original description of Peters is too vague to be of much help.

On comparing the above series with Boulenger's redescription (1893, p. 55) which was based on a single snake from Zanzibar, and using his nomenclature for the scales, I find that ours differs in the preocular being in contact with the 2nd and 3rd labials only, not 2nd, 3rd and 4th; ocular *not* in contact with nasal; and I should be inclined to add *not* separated from the 4th labial by a subocular but in contact with the 4th labial; this, however, depends on which of two shields is considered the homologue of the ocular.

It would appear that Boulenger's description is inaccurate in some respects, and his naming of certain scales, though correct, misleading and likely to result in the description of synonyms.

Coloration in life. Flesh pink.

Measurements. Largest snake (M.C.Z. 40070) measures 500 (493 + 7) mm. Diameter at midbody 6 mm.

Breeding. Four eggs measuring 16 x 5 mm. in ♀ taken 29 June, 1934.

Diet. Termites in one of the Malindi snakes.

Habitat. The first specimen listed is one of three collected by Mr. H. J. Allen Turner in the Sokoki Forest near Malindi. I found the Mkonumbi snake lying dead upon the road five miles south of the village. It had probably been drowned out of its burrow by the torrential rains that had fallen that morning. The Gongoni reptile was in sandy soil in a native garden devoted to maize and mahoga. The Malindi series in the reddish soil of a cotton plantation. All were secured after heavy rain.

LEPTOTYPHLOPIDAE

Leptotyphlops boulengeri (Boettger)

Glauconia boulengeri Boettger, 1913, in Voeltzkow, Reise in Ostafrika, **3**, p. 354, pl. xxv, fig. 1: Manda Island, Kenya Colony.

4 (M. C. Z. 40084–7) Lamu, Lamu Island, K. C. 7.v.34.
1 (M. C. Z. 40088) Kitau, Manda Island, K. C. 18.v.34.

Variation. This topotype and the series from the neighbouring island of Lamu are, I believe, the first examples of this rare snake to be taken since it was described over twenty years ago. The original description, being based on a single specimen, may be expanded as follows. Midbody scale-rows 14; diameter is included in the length 33 to 35 times (30 in type); tail is included in the total length 11 to 12 times (11 in type); supraocular scarcely once and a half times as long as broad; rostral about equal in width to (slightly wider than) the nasal, reaches backwards to an imaginary line connecting the anterior borders of the eyes; upper portion of the nasal almost in contact with its fellow behind the rostral.

Coloration in life. Flesh pink.

Measurements. The largest snake (M.C.Z. 40085) measures 201 (185 + 16) mm. Diameter at midbody 6 mm.

Diet. Termites in largest specimen.

Habitat. I caught the Kitau reptile among termites beneath a sheaf of rotting grass lying on red soil at the edge of one of the native gardens. Persistent search failed to reveal another example and it is possible that the type came from Manda, an abandoned settlement at the other end of the little island.

The species was almost certainly introduced to Lamu Island with dhow cargoes of the red soil, which in Arab times was extensively taken over to Lamu for building purposes, possibly imported with sand. It may seem strange that sand should be imported to Lamu

which is nothing but a sandbar. Nevertheless even during our brief stay a dhow came over and loaded up with sand; from the owner I learned that the coarse sand from Manda Island made better cement than the fine kind found on Lamu.

Leptotyphlops longicauda (Peters)

Stenostoma longicauda Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 621: Tete, Mozambique.

1 (M. C. Z. 40089) Peccatoni, K. C. 24.iv.34.
33 (M. C. Z. 40090–119) Ngatana, K. C. 14–21.vi.34.

Distribution. These specimens constitute the first record of the occurrence of this species in Kenya Colony and come from an area almost exactly half-way between the most northerly record for *longicauda,* that of Tanga, Tanganyika Territory (Angel, 1925, p. 30) and the type locality of the related *fiechteri* in Italian Somaliland.

Variation. It is often difficult to measure these small snakes twice with equal precision, a trifling fluctuation in the diameter, a slight stretching of the body may result in very different proportionate readings. Especial care has been taken therefore and the extremes checked and rechecked. The following figures are based on the Ngatana series only so as to give an idea of the range of variation in one locality.

Total lengths range from 61–108.5 mm., midbody diameters 1–2 mm., diameter is included in the length 46 to 81 times, average 59.5; tails included in the total length 9.5 to 12.5 times, average 10.4. The long-tailed specimens are males, the short-tailed are females.

These specimens have been compared with Mozambique material which I collected at Lumbo. No examples of *fiechteri* have been seen for it is known only from the type which had a diameter into length of 68.5, and a tail into length of 12.5 times, which is precisely that of our Peccatoni snake.

Coloration in life. Flesh pink and somewhat transparent.

Measurements. The largest snake (M.C.Z. 40092) measures 108.5 (98 + 10.5) mm., the smallest (M.C.Z. 40019) measures 61 (55 + 6) mm.

Habitat. Ten of the Ngatana series were taken from a huge termite hill at the edge of a rice swamp and less than a quarter of a mile from the north bank of the Tana River. The rest were taken within six inches of the surface of black cotton soil forming part of the banks surrounding, and running through, flooded rice fields. In some

instances these banks were heaped with weeds, in others old maize stalks had been thrown upon them and formed some protection from the powerful sun. It appears probable, that, on the flooding of the rice fields these tiny snakes are driven to seek safety in the raised banks, resulting in a concentration of them until the water subsides. I might add that these rice fields are on the site of the old village of Ngatana, a mile or so west and north from the new village of Wema.

Leptotyphlops conjuncta (Jan)

Stenostoma conjuncta Jan. 1861, Arch. Zoöl. Anat. Fisiol., **1**, p. 189: South Africa.

2 (M. C. Z. 40082–3) Kibwezi, K. C. 24.iii.34.

Corrigenda. Sternfeld's (1910, p. 13) record of *Glauconia signata* from Kibwezi is undoubtedly referable to this species.

Variation. Midbody scale-rows 14; diameter is included in the length 53 to 56 times; tail is included in the total length 10 times. It is interesting to note that when measured immediately after death the result was 51 (instead of 56) times for the larger snake.

Measurements. The larger snake (M.C.Z. 40082) measures 127 (115 + 12) mm. Diameter at midbody 2.25 mm. (in life 2.5 mm.).

Habitat. Taken in camp on freshly-cleared ground beneath a fig tree, and within two hundred yards of the station, the morning after a shower during the night.

BOIDAE

Python sebae (Gmelin)

Coluber sebae Gmelin, 1788, Syst. Nat., **1**, p. 1118: No type locality.

1 (M. C. Z. 40301) Mkonumbi, K. C. 28.v.34.
1 (M. C. Z. 40302) Ngatana, K. C. 14.vi.34.

Distribution. No attempt was made to secure a series of this well-known reptile. On the western slopes of Mount Debasien a broad trail was found in close proximity to an abandoned Karamoja village and traced through the bush for a hundred yards. (20. xi. 33). At Tsavo a seven-foot python was seen basking under a rock on a kopje not far from the river. When I stalked it, the snake withdrew into a crevice and disappeared. At Voi I was shown a large skin of a locally-killed python. It is said to occur in a swamp on a remote part of Lamu Island. I examined specimens from the Sokoki Forest (Turner coll.)

and Naivasha (L. S. B. Leakey coll.). Sternfeld has recorded an example from Kibwezi.

Native names. *Emorotot* (Karamojong); *nzatu* (Lugishu); *ivaga* (Luragoli); *ivaka* (Lutereki); *are* (Kitaita); *satu* (Kipokomo and Kiswahili).

Variation. Midbody scale-rows 88–90; ventrals 275–282; anal entire; subcaudals 68–73.

Diet. There were the remains of a bird in the young python from Ngatana.

Eryx colubrinus loveridgei Stull

Eryx thebaicus loveridgei Stull, 1932, Occ. Papers Boston Soc. Nat. Hist., **8**, p. 29, pl. ii, fig. B: Mbunyi, Kenya Colony.

14 (M. C. Z. 40303–16) Voi, K. C. 9–24.iv.34.

Native name. *Ngwao* (Kisagalla).

Affinities. Recently, Flower (1933, pp. 804–5) has given cogent reasons for placing *thebaicus* in the synonymy of *colubrinus* (Linné) which he has removed from the synonymy of *Eryx jaculus* (Linné) where it had been placed by Boulenger (1893, p. 125).

Overlooking Flower's paper, Ahl (1933, p. 325) referred *loveridgei* to the synonymy of *thebaicus* (i.e. *colubrinus*). In this action I was inclined to agree, but on going into the status of the East African form more fully, concluded that it may be recognized on the average lower number of ventrals as set forth in the key below under *E. c. rufescens* Ahl.

Variation. In 1932, Dr. O. G. Stull separated East African specimens under the name of *loveridgei*, distinguishing them from their northern allies on the following grounds. "This subspecies differs from the allied *E. t. thebaicus* (Reuss) of North Africa in the higher number of scale rows (53–59 instead of 47–49), the lower average number of ventrals (168–182, average 173.2) instead of 175–192 (average 184.8), and the immaculate belly and sides."

Some years ago, (1916, p. 82) I published scale counts of five East African specimens taken from Kismayu, Italian Somaliland to Taveta, Kenya Colony. More recently, when passing through Nairobi, I took the opportunity of rechecking these counts which are as follows:— Midbody scale-rows 46–53; ventrals 162–182; subcaudals 21–27.

The fourteen examples from Voi, listed above, give:— Midbody scale-rows 46–56; ventrals 162–182; anal single; subcaudals 20–27.

The latter are normally single though rarely as many as 5 (M.C.Z. 40316) may be paired.

If one collates the data of the 24 East African boas now available we have:— Midbody scale-rows 46–59, average 49; ventrals 162–182, average 170; subcaudals 20–27, average 24.

This effectually disposes of the suggestion that there is a difference in the number of midbody scale-rows between North and East African examples, neither is there any difference in subcaudal range, nor in color pattern, which is discussed below. Dr. Stull informs me that there are differences in the mandibular and pterygoid teeth as well as in the hemipenes of the two forms, this evidence will be published in her forthcoming Monograph of the Boidae.

Coloration in life. The Voi snakes were rich orange heavily mottled with black or chocolate brown. Thus they present a totally different appearance from the colored plate of an Egyptian *colubrinus* furnished by Anderson (1898, pl. xxxii, fig. 2) who describes their general color as "yellowish, with large, irregular, more or less transverse, purplish-brown markings," Major Flower writes me that he has no notes on the coloration in life of Egyptian *colubrinus*. In the absence of such data I tentatively assume that Anderson's plate and description were based on alcoholic material. Justification for this assumption may be found in the fact that Egyptian and Kenya material are almost indistinguishable after a few years in alcohol, though the Egyptian snakes may be slightly more rufous and less chocolate brown.

As both Boulenger (1893, p. 125) and Anderson (1898, p. 237) describe '*thebaicus*' (*i.e. colubrinus*) as having "lower parts uniform white," or "Under surface yellowish, immaculate." I am at a loss why Stull should have cited the "immaculate belly and sides" of East African specimens as a distinguishing character.

Measurements. The largest snake, a female (M.C.Z. 40303) measures 634 (584 + 47) mm., and is therefore the record for the southern form, the smallest (M.C.Z. 40311) measures 176 (160 + 16) mm.

Breeding. On April 24, 1934, a native brought in a female and her seven young which he had found altogether in a hole. The length of the mother is given above, the young ranged from 176 to 189 mm.

Diet. A gerbil (*Dipodillus pusillus*) was recovered from one snake. Another boa, taken on April 9, towards the close of a prolonged drought, had nothing in its stomach, but was well nourished and exhibited large deposits of fat. Such was also the condition of two females taken on the 12th.

Defence. The cloacal glands contain a very evil-smelling secretion,

those of the mother of the seven young were full and, on being pressed, shot out fine threads of the viscid fluid to a distance of one foot away.

Habitat. I captured the two adult females on the 12th beneath the debris of a collapsed native hut about a mile southeast of Voi Station. Associating with them in this situation were two female burrowing vipers (*Atractaspis microlepidotus*).

Eryx colubrinus rufescens Ahl

Eryx rufescens Ahl, 1933, Sitz. Ges. naturf. Freunde Berlin, p. 324, figs.: Dadab,[1] South Ethiopia.

1 (M. C. Z. 39110) Bulbar, British Somaliland (Brockman).

Affinities. Ahl recently described as a full species, a color form of *colubrinus*, which has long been confused with *thebaicus* (now a synonym of *colubrinus*). While it is not usual to recognize color races among the ophidia, our knowledge of the herpetofauna of the northeast corner of Africa leads one to suspect that it may be recognizable even though none of the scale characters cited by its author differentiate it from the typical form.

As might be expected, the specimen from British Somaliland listed above, agrees with Ahl's Ethiopian holotype in the uniform nature of its dorsal pigmentation. At mathematical midbody, however, it possesses 50 (instead of 44–46) midbody scale-rows; it has 17 (instead of 14) infralabials, an extremely variable character in this genus. I fail to see any difference such as 'somewhat broader head' or 'larger scales on the underside of the head' between this Somaliland snake and a topotypic *colubrinus* from Luxor, Egypt.

The following tentative key may aid in distinguishing the forms until more material is available.

Dorsal coloring uniform; ventrals 181–194, average (2 ex.) 187. . . . . *E. c. rufescens*

Dorsal coloring consisting of heavy blotches.

Ventrals 175–197, average (36 ex.) 186.3. . . . *E. c. colubrinus*

Ventrals 162–182, average (24 ex.) 170.8. . *E. c. loveridgei*

It might be added that the uniting of ventral and subcaudal counts for these two last forms, merely reflect the same variation of 16 as is shown in the ventral counts in the key. I am indebted to Dr. O. G. Stull for furnishing me with the ventral counts, based on literature and her own researches, for *E. c. colubrinus*.

[1] ? Dudub, roughly 7° N., 43° E.

COLUBRIDAE

Natrix olivacea olivacea (Peters)

Coronella olivacea Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 622: Tete, Mozambique.

6 (M. C. Z. 40316–20) Kaimosi, K. C. 11–20.ii.34.
1 (M. C. Z. 40321) Mkonumbi, K. C. 22.v.34.
1 (M. C. Z. 40322) Near Witu, K. C. 31.v.34.
2 (M. C. Z. 40324–5) Belazoni, K. C. 5.vi.34.
1 (M. C. Z. 40326) Laini, K. C. 6.vi.34.
18 (M. C. Z. 40327–44) Ngatana, K. C. 11–20.vi.34.
7 (M. C. Z. 40345–50) Golbanti, K. C. 22.vi.34.

Distribution. Already recorded from Ngatana by Günther (1894), p. 87) under the name of *Coronella olivacea* var. *dumerilii* Günther, a race described from the Gold Coast.

Native names. *Kigoyogoyo* (Luragoli); *shigoyogoyo* (Lutereki); *tine* (Kipokomo). Some Wapokomo, however, apply *tine* also to *Crotaphopeltis h. hotamboeia* which, next to *olivacea* is the most abundant snake along the lower Tana River. They have a specific name for *hotamboeia.*

Variation. Midbody scale-rows 18–19, the three snakes with 18 have 19 a short distance anterior to midbody; ventrals 131–147; anal divided; subcaudals 44–61; labials 8 (rarely 7 or 9), the 4th and 5th entering the orbit, M. C. Z. 40319 has 7 with 4th and 5th entering the orbit, M. C. Z. 40322 has 8 with 3rd, 4th and 5th, M. C. Z. 40331 has 9 with 4th, 5th and 6th, M. C. Z. 40325 has 9 with 5th and 6th, all these aberrations, however, occur on the right side only; preoculars 1, except for M. C. Z. 40333 which has 2; postoculars 3 in twenty-nine snakes, 2 in five, 1 on left side only of M. C. Z. 40336; temporals 1 + 2 excepting in four snakes where, by vertical division of the anterior temporal, we find 1 + 1 + 2, at least on one side of the head.

Though so short, the Kaimosi series displays a noticeably higher ventral count (132–147) and a lower subcaudal (44–61) as contrasted with the larger coastal series which possess 131–138 ventrals, and 52–69 subcaudals. However, a check-up with all the available data of West African *olivacea,* to which one might expect the Kaimosi snakes to belong, shows the range to be substantially the same as in the East.

Coloration. The Kaimosi series alone exhibit gray, olive and mauve types of coloring. All, however, possess the dark olive band or dorsal

stripe characteristic of snakes from the Central African Lake Region. This stripe does occur, though rarely, in the coastal series.

Measurements. The largest ♂ (M. C. Z. 40329) measures 464 (332 + 132) mm., females in the Kaimosi series easily surpass those from the coast, the largest (M. C. Z. 40318) measuring 491 (400 + 91) mm.

Breeding. The two largest females taken at Kaimosi on February 14 and 19 respectively, each held 6 well-developed eggs which measured approximately 23 x 7 mm. At Ngatana between June 11 and 20 the following were found: (1) 6 small eggs, (2) 6 eggs measuring 15x6 mm., (3) 6 eggs 19 x 7 mm., (4) 6 eggs 19 x 11 mm., (5) 6 eggs 22 x 10 mm., (6) 6 eggs 23 x 11 mm. These latter quite ready for deposition.

Compare these with the smaller number (2 to 4) produced by the montane race *N. o. ulugurucnsis* from Tanganyika Territory.

Diet. *Bufo steindachnerii* was recovered on three occasions from snakes taken at Laini and Ngatana; *Arthroleptis minutus* from a Kaimosi specimen; *Hyperolius milnei* at Golbanti; *Rana* sp. at Witu, and a fish from another Ngatana reptile.

Habitat. One beneath a board by the millpond at Kaimosi, another in a tussock of grass in midstream. One was observed to swim the Tana River in full flood at a point just above Golbanti where the river was at least fifty yards broad. On reaching the north bank it paused to rest, thus enabling me to catch it.

To do so, I placed one foot on the muddy bank, the other remaining on the side of the dugout in which we had given chase. The Pokomo boatmen, however, on observing me seize the snake, divined my intention of returning to the canoe with it, incontinently dropped their paddles and scrambled back along their unsteady craft. Without their paddles counteracting the current, the dugout was swirled away from shore. For a fleeting moment my legs spreadeagled, then I was plunged into the muddy torrent without touching bottom. As I went down I tossed the snake into the dugout where it disappeared beneath the baggage. Later it was recovered when we were unloading the craft at Golbanti.

Both at Golbanti and in the vicinity of Wema, Ngatana, the Olive Water Snake was exceedingly common among the drying grass and weeds heaped in lines to demarcate the natives' gardens.

Boaedon lineatus Duméril & Bibron

(Plate 3, fig. 1)

Boaedon Lineatum Duméril & Bibron, 1854, Erpet. Gen., **7**, p. 363: Gold Coast.

20 (M. C. Z. 40351–70) Sipi, U. 14–22.xii.33.
5 (M. C. Z. 40371–5) Butandiga, U. 5–11.i.34.
33 (M. C. Z. 40376–407) Kaimosi, K. C. 7–28.ii.34.
3 (M. C. Z. 40408–10) Voi, K. C. 9.iv.34.
1 (M. C. Z. 40411) Mt. Mbololo, K. C. 17.iv.34.
32 (M. C. Z. 40412–43) Lamu Id., K. C. 7–14.v.34.
1 (M. C. Z. 40444) Mkonumbi, K. C. 23.v.34.
2 (M. C. Z. 40445–6) Peccatoni, K. C. 26.v.34.
3 (M. C. Z. 40447–9) Near Witu, K. C. 31.v.34.
2 (M. C. Z. 40450–1) Laini, K. C. 6.vi.34.
13 (M. C. Z. 40452–64) Ngatana, K. C. 9–21.vi.34.
1 (M. C. Z. 40618) Golbanti, K. C. 28.vi.34.
2 (M. C. Z. 40465–6) Malindi, K. C. 30.vi.34.

Distribution. Also 4 from Sokoki Forest. (H. J. A. T.)

Native names. Namage (Lugishu); *moya* (Kisagalla); *ilumangiu* (Kitaita); *nyoka kitangu* (Kiamu); *muatu* (Kipokomo).

Variation. Midbody scale-rows 25–33; ventrals 186–238; anal single; subcaudals 46–71; labials 8, the 4th and 5th entering the orbit on both sides of the head in 102 snakes, 8 labials with the 3rd, 4th and 5th on both sides in three snakes, 9 labials with the 4th and 5th on both sides in nine snakes, 9 labials with 5th and 6th on both sides in two snakes, 9 with 4th, 5th and 6th on the right side while the left is normal in two snakes, azygous combinations of the above variations in six others; preoculars 2 except M. C. Z. 40618 which has only 1 on the right side and sixteen snakes which have only 1 on both sides, seven of the latter are from Ngatana, five from Kaimosi; postoculars 2 except for M. C. Z. 40456 which has 3; temporals 1 + 2 in 103 snakes, 1 + 3 in five, an azygous combination of these in nine others and 2 + 3 on the right side of M. C. Z. 40397.

On analysis of the above data we find the material falls into two very distinct groups, viz.:

62 snakes from the interior plateau (2,000 to 7,000 feet) which have from 29–34 midbody scale-rows and 201–238 ventrals.

56 snakes from the coastal plain (under 500 feet) which have from 25–27 midbody scale-rows and 186–213 ventrals.

The former of these corresponds to *lineatus* Duméril & Bibron, for the latter at least two names are available. For the present it seems inadvisable to recognize the latter for my records of several hundred scale-counts from South and West Africa show that the ranges are not too well defined. In brief it may be said that the nominate form inhabits West and central Africa while the counts for Angola, South Africa and the East African coast are distinctly lower, individuals with

higher counts occur in this area, however, and conversely those with low counts in the general region allocated to typical *lineatus*.

Measurements. The largest ♂ (M. C. Z. 40363) measures 820 (680 + 140) mm., the largest ♀ (M. C. Z. 40381) measures 944 (837 + 107) mm. The smallest snake (M. C. Z. 40435) measures 122 (85 + 37) mm.

I was very much struck by the smaller size of all, except two large females, in the Lamu series (see remarks on diet below). The average total length of thirteen males was 480 mm. as against an average total length of thirteen unselected males from the more tropical central region (Sipi, Butandiga, Kaimosi) of 657 mm.

The largest ♂ in the Lamu series measured 554 mm., the largest ♀, 918 mm. It will be seen that the latter is not far short of the biggest ♀ from Kaimosi, but together with one other ♀ it was far larger than the average for the island.

Breeding. The undermentioned records of developing eggs were made.

Sipi, December 16, 1933.	♀ held 1 egg measuring 37 x 18 mm.
Butandiga, January 11, 1934.	♀ held 1 egg measuring 28 x 13 mm.
Kaimosi, March 1, 1934.	♀ held 7 eggs measuring 29 x 15 mm.
Kaimosi, March 1, 1934.	♀ held 10 eggs "ready for deposition."
Lamu Id., May 10, 1934.	♀ held 5 eggs measuring 28 x 12 mm.

The first two are difficult of explanation for the snakes were large examples, the Butandiga reptile held a second egg only half the size of the one measured. The Kaimosi snake with seven eggs actually measured 38 inches.

Diet. Rodent fur was present in three snakes from Sipi and one from Malindi. The shrew (*Crocidura t. zaodon*) was recovered from a Sipi and a Butandiga snake; a roof rat (*Rattus r. kijabius*) measuring 7½ inches from snout to anus was in the stomach of a 38″[1] female House Snake at Kaimosi (see plate 3, fig. 1), a smaller rat in a second snake; a family of pigmy mice (*Leggada t. triton*) in one Sipi snake, a single one in another reptile from Kaimosi; at this locality two snakes had swallowed mice (*Leggada g. grata.*)

A young House Snake was taken in the act of swallowing a gecko (*Hemidactylus mabouia*) at Ngatana; another species of gecko (*Lygodactylus p. mombasicus*) had been swallowed by one at Voi; a lizard (*Eremias neumanni*) was recovered from another Ngatana snake; a skink (*Siaphos kilimensis*) from an Mbololo reptile.

[1]Misprinted in mammal report as 32″.

On Lamu Island, for the first time in my experience of this reptile, amphibian bones were found in one, a frog (*Rana o. oxyrhynchus*) in another, the burrowing frog (*Hemisus m. marmoratum*) in a third. It might be added that mammals are very scarce on the island, this factor may have forced the snakes to an amphibian diet; possibly we have here the explanation of the small size attained by *Boaedon lineatus* on Lamu (see above) though this is probably correlated with the reduced number of midbody and ventral scale counts.

Parasites. Two Sipi snakes had the larval stages of Protocephalid tapeworms encysted on their mesenteries, their viscera being all snarled up with adhesions resulting from the encysted worms. A Kaimosi snake was similarly affected.

Enemies. One House Snake was found in the stomach of a Banded Harrier-Eagle (*Circaëtus fasciolatus*) at Ngatana.

Aestivation? On February 10, 1934, at Kaimosi, a native brought in four House Snakes, all of the same size and nearly full-grown. He stated that while engaged in digging a pit, he had come upon them all together in a hole. As the rains had not broken as yet, it would appear that they were aestivating in company.

Folklore. On Mount Mbololo several Wataita told me that the House Snakes which I had collected, were the mountain form of the Mamba (*Dendraspis angusticeps*) which was found lower down! Whether this idea is widespread, or the invention of my informant, I cannot say.

Boaedon olivaceus (Duméril)

Holurophis olivaceus A. Duméril, 1856, Rev. Mag. Zoöl., p. 466: Gaboon.

♂ (M. C. Z. 39965) Mabira Forest, U. 28.viii.33.

Distribution. This snake was collected and presented by Captain C. R. S. Pitman. The species has been recorded from Uganda previously.

Variation. Midbody scale-rows 25; ventrals 192; anal entire; subcaudals 52; labials 8, the 4th and 5th entering the orbit; temporals 1 + 2.

Boulenger (1893, p. 335) with only Cameroon material, states: "frontal once and a half as long as broad, as long as its distance from the end of the snout." In a series from Metet, Cameroon (M. C. Z. 10307–13) the frontal is 1¼ to 1⅛ as long as broad. In the Uganda snake, which otherwise conforms to Boulenger's description except in

coloration, the frontal is scarcely longer than broad and only as long as the prefrontals and internasals together, *i.e.* shorter than its distance from the end of the snout.

Coloration in alcohol. Above, uniformly plumbeous. Below, yellow, the dorso-lateral pigmentation strongly impinging upon the ventrals which also are spotted or blotched with plumbeous sparsely and irregularly.

Measurements. This ♂ measures 594 (495 + 99) mm.

Habitat. Captain Pitman expressed surprise on hearing that this reptile was a relative of the Brown House Snake for in habits he believes it to be a waterside or semi-aquatic snake.

Lycophidion capense capense (Smith)

(Plate 3, fig. 2)

Lycodon capense A. Smith, 1831, S. Africa Quart. Journ., (1) No. 5, p. 18: Kurrichane, *i.e.* Rustenberg district, Transvaal.

1 (M. C. Z. 39966) Kigezi district, U. C.R.S.Pitman.
1 (M. C. Z. 40467) Sabei, Mt. Elgon, U. 9.xii.33.
3 (M. C. Z. 40468–70) Sipi, Mt. Elgon, U. 10–27.xii.33.
4 (M. C. Z. 40471–3) Kaimosi, K. C. 25.ii–2.iii.34.
1 (M. C. Z. 40474) Mkonumbi, K. C. 28.v.34.
3 (M. C. Z. 40475–7) Ngatana, K. C. 18.vi.34.

Native name. Wahobi (Lugishu); *Kifuya* (Kipokomo).

Variation. Midbody scale-rows 17; ventrals 180–214; anal entire; subcaudals 29–54; upper labials 8, the 3rd, 4th and 5th entering the orbit; distance from the frontal to the end of the snout shorter, or much shorter, than the length of the parietals.

Coloration. Agreeing with the typical form in the throat being more or less white. In the field the Uganda and Kaimosi (i.e. western Kenya) snakes were noticeably more spotted than the coastal specimens. This difference is not correlated with any scale characters enabling one to separate them.

Measurements. The largest ♂ (M. C. Z. 40469) measures 443 (377 + 66) mm., the largest ♀ (M. C. Z. 40468) measures 558 (495 + 63) mm. though one from Sabei with an injured tail surpasses the snout to anus length by 10 mm.

Breeding. The big Sabei female held six eggs measuring 17 x 12 mm. on December 9, 1933. In marked contrast was the smallest Kaimosi

reptile, measuring 267 mm. which held but a single egg measuring 20 x 6 mm. on March 2, 1934.

Diet. A Striped Skink (*Mabuya striata*) was recovered from a Sipi snake and an *Ablepharus wahlbergii* from another at Kaimosi.

Lycophidion capense > < acutirostre Günther

Lycophidion intermediates between *capense* and *acutirostre* Loveridge, 1933, Bull. Mus. Comp. Zoöl., **74**, p. 234: Zanzibar and Bagamoyo, Morogoro and Kilosa in Tanganyika Territory.

2 (M. C. Z. 40478–9) Kibwezi, K. C. 23.iii.34.
1 (M. C. Z. 40480) Mt. Mbololo, K. C. 26.iv.34.
1 (M. C. Z. 40481) Malindi, K. C. 30.vi.34.
1 (Destroyed) Changamwe, K. C. 5.vii.34.

Distribution. Also 4 from Sokoki Forest (H. J. A. T.). These records extend the area of intermediates to the northward as was to be expected. It seems probable that eventually it will be advisable to increase the range of ventrals in *acutirostre* so as to include them with that form. For further discussion see citation given above. What is needed is a large series of Zanzibar material so that the ventral range on that island may be ascertained.

Variation. Midbody scale-rows 17; ventrals 154–170; anal entire; subcaudals 28–37; upper labials 8, the 3rd, 4th and 5th entering the orbit; parietal length slightly or much longer than the distance from the frontal to the end of the snout.

Coloration. All the above agree in having the throat and lower surface uniformly blackish or blackish-brown.

Measurements. The largest ♂ (M. C. Z. 40478) measures 294 (260 + 34) mm., the largest ♀ (M. C. Z. 40481) measures 399 (350 + 49) mm.

Breeding. The largest female held eight eggs measuring 13 x 7 mm. on June 30, 1934.

Diet. A lizard (*Eremias s. spekii*) and a skink (Riopa sundevallii) were recovered from the two Kibwezi snakes.

Parasites. A single nematode (*Ophidascaris sp.*) was preserved from the stomach of the Malindi female.

Enemies. A male was disgorged by another snake (*Calamelaps unicolor*) taken at Changamwe. The wolf snake was only 20 mm. shorter than its captor. It was so far decomposed that, after taking its scale counts, I destroyed it. Its first three subcaudals were unpaired.

Mehelya nyassae (Günther)

Simocephalus nyassae Günther, 1888, Ann. Mag. Nat. Hist., (6), **1**, p. 328: Lake Nyasa, Nyasaland.

♀ (M. C. Z. 40482) Wema, Ngatana, K. C. 13.vi.34.

Distribution. Besides the type, in 1893, the British Museum only possessed a second specimen from Zanzibar. In 1918 I collected a female at Lumbo, Mozambique. The above specimen from the north bank of the Tana River constitutes a northward extension of its range by some 250 miles and is the first record for Kenya.

Variation. Midbody scale-rows 15; ventrals 175; anal entire; subcaudals 55 (as against 62–63); labials 7, the 3rd and 4th entering the orbit; preocular 1; postocular 1; temporals 1 + 2. It differs from the description in the Catalogue of Snakes (1893, p. 347, pl. xxiii, Fig. 2) in the internasals being two-thirds, not half, the length of the prefrontals; the frontal as long as, not longer than, broad, and *shorter* than its distance from the rostral.

Measurements. This gravid ♀ measures 554 (452 + 102) mm.

Breeding. The oviducts held three eggs measuring 10 x 4 mm. on June 13.

Defence. On being struck with a stick by one of a gang employed in clearing grass immediately in front of my tent, this Nyasa File Snake emitted a most foul odour, far surpassing that of the European Grass-snake.

Chlorophis carinatus Anderson

Chlorophis carinatus Andersson, 1901, Svenska Vetensk.- Akad. Handl., **27**, No. 5, p. 9: Cameroon.

♂ (M. C. Z. 40173) Sipi, U. 18.xii.33.
♂ (M. C. Z. 40483) Kaimosi, K. C. ii.34.

Distribution. Originally described from the Cameroon, subsequently recorded by Schmidt (1923, p. 74) from the Belgian Congo, the two specimens listed above constitute the first records for the occurrence of *carinatus* in Uganda and Kenya Colony.

Native name. Kangasira (Lugishu). The Bagishu recognize the distinctiveness of this species from *C. hoplogaster* which occurs alongside it both at Sipi and Kaimosi, but which is far more abundant.

Affinities. Naturally I have considered the possibility of these being

aberrant examples of either *hoplogaster* or *irregularis*. The combination, however, of 13 midbody scale-rows and an undivided anal appear to preclude this possibility even should we negative the distinctive coloring of *carinatus*. Elsewhere I have discussed the relationships of *carinatus* with *heterodermus* which so frequently occurs with it.

If the ventral and subcaudal ranges as given by Hecht (1929, p. 331) are correct then there is nothing to differentiate the western *carinatus* from the eastern *macrops* (confined to the Usambara Mountains) except the number of labials and their arrangement—normally 9, with the 4th, 5th and 6th entering the orbit in *carinatus*, normally 8 with the 5th and 6th entering in *macrops*. From their coloration also it is undoubtedly true that *carinatus* is the western representative of *macrops* but it appears inadvisable to treat it as a race in view of the fact that their ranges are still separated by some 450 miles.

Variation. Midbody scale-rows 13; ventrals 146–152, faintly keeled on anterior third of body; anal entire; subcaudals 82–86; labials 9, the 4th, 5th and 6th entering the orbit, or 10, the 4th, 5th, 6th and 7th entering on the left side only (M. C. Z. 40175); preocular 1; postoculars 2; loreal 1; temporals 2 + 2 or 2 + 1.

Measurements. The larger ♂ (M. C. Z. 40173) measures 238 (152 + 86) mm.

Coloration in life. On receiving the somewhat damaged Sipi snake, I immediately recognized its distinctive appearance as compared with *hoplogaster* which was so common in this locality. Fortunately I recorded its coloring at once, for in alcohol it is indistinguishable from that of *hoplogaster*. This coloration should be compared with that of *macrops* which I noted in the Usambaras (Barbour & Loveridge, 1928, p. 116).

Above, dark olive with 104 deep-black, irregular crossbands between head and anus, these are represented on the tail by black flecks; the olive scales between the crossbands are edged with pale blue on the anterior two-thirds of the body; upper lip brownish-olive anteriorly, white below the eye shading off into olive posteriorly. Below, throat pure white, anterior ventrals tinged with yellow, remainder of the under surface dark green with its anterior third heavily suffused with yellow; on the anterior two-thirds edged with yellow laterally, on the posterior third with bluish white, on the tail with dusky.

Eye. The centre of the eye is black surrounded by a light area, then by a fine orange line, then by an olivaceus area flecked with black; outermost ring, black.

Chlorophis hoplogaster (Günther)

Ahaetulla hoplogaster Günther, 1863, Ann. Mag. Nat. Hist. (3), **11**, p. 284: Port Natal, *i.e.* Durban, Natal.

1 (M. C. Z. 40496) Mt. Debasien, U. 15.xi.33.
22 (M. C. Z. 40151–72) Sipi, Mt. Elgon, U. 12–23.xii.33.
12 (M. C. Z. 40484–95) Butandiga, U. 5–16.i.34.
1 (M. C. Z. 40497) Kirui's Village, K. C. 25.i.34.
13 (M. C. Z. 40498–509) Kaimosi, K. C. 19.ii–5.iii.34.

Native name. Emun (Karamojong); *naranyase* (Lugishu), but neither specific.

Variation. Midbody scale-rows 15; ventrals 153–178; anal divided; subcaudals 87–109; labials 8, the 4th and 5th entering the orbit on eighty sides, or 9, the 4th and 5th entering on two sides, or 9, the 5th and 6th entering on sixteen sides; preoculars 1, or 2 on three sides (M. C. Z. 40501, 40504); postoculars 2, or 3 on left side of M. C. Z. 40492 only; temporals 1 + 2 on sixty-three sides, 1 + 1 on thirty-four sides, or 2 + 2 on one side of M. C. Z. 40489.

Some years ago, I (1916, p. 78) invited attention to the variations in two large collections of Chlorophis made by Mr. H. J. Allen Turner at his camps at Kaimosi and on the Yala River nearby. Shortly afterwards a third collection was received in which the *hoplogaster* material exhibited the following astonishing labial variations:

1 specimen with	7–7	supralabials,	3rd and 4th	entering the orbit.				
1	"	" 7–7	"	4th and 5th	"	"	"	
1	"	" 7–8	"	4th and 5th	"	"	"	
1	"	" 8–7	"	4th and 5th & 3rd and 4th	"	"		
10	"	" 8–8	"	4th and 5th	"	"	"	
1	"	" 8–8	"	5th and 6th	"	"	"	

Measurements. The largest ♂ (M. C. Z. 40499) measures 930 (700 + 230) mm. but the tip of the tail is lacking; largest ♀ (M. C. Z. 40155) measures 1045 (762 + 283) mm.; the smallest snake (M. C. Z. 40166) measures 435 (305 + 130) mm.

Breeding. The undermentioned records of developing eggs were made in the field. It should be noted, however, that several females were taken at Sipi between December 12 and 23, which showed no signs of developing ova and the snake taken on the 23rd held an eighth egg much smaller than the other seven.

Mt. Debasien,	November	11, 1933.	♀ held	7	eggs measuring	21 x 8 mm.
Sipi,	December	12, 1933.	"	7	" "	17 x 5 mm.
"	"		"	4	" "	22 x 6 mm.
"	"		"	5	" "	30 x 8 mm.
"	"		"	4	" "	31 x 13 mm.
"	"	23, 1933.	"	7	" "	27 x 8 mm.
Butandiga,	January	5, 1934.	"	6	" "	13 x 5.5 mm.
Kaimosi,	February	20, 1934.	"	7	" "	30 x 12 mm.
"	"	25, 1934.	"	8	" "	31 x 13 mm.
"	March	3, 1934.	"	5	" "	34 x 12 mm.

Diet. A gecko (*Cnemaspis a. elgonensis*), the freshly dropped tail of a lizard (*Lacerta jacksoni*), a skink (*Mabuya striata*), a chameleon (*C. b. höhnelii*), and a frog (*Rana f. fuscigula*) were found in Sipi snakes. Three snakes held chameleons (*C. b. höhnelii*) and a fourth a toad (*Bufo r. regularis*) at Butandiga. A skink (*M. striata*) in an old *hoplogaster*, an enormous frog (*Rana o. gribinguiensis*) in a quite moderately sized snake, a tree frog (*Hyperolius rossii*) in a very young one at Kaimosi.

Parasites. Encysted nematodes were found in the stomach wall of a Kaimosi reptile and preserved.

Chlorophis neglectus (Peters)

Philothamnus neglectus Peters, 1866, Monatsb. Akad. Wiss. Berlin, p. 890: Prazo Boror, Mozambique.

♀ (M. C. Z. 40515), Nairobi, K. C. 17.iii.34.
2 (M. C. Z. 40516–7) Peccatoni, K. C. 24.v.34.
1 (M. C. Z. 40518) Mkonumbi, K. C. 29.v.34.
♂ (M. C. Z. 40519) Near Witu, K. C. 30.v.34.
♂ (M. C. Z. 40520) Kau, K. C. 4.vi.34.
2 (M. C. Z. 40521) Ngatana, K. C. 12.vi.34.

Distribution. On April 21, 1934 at 4,800 feet on Mount Mbololo, I captured a green snake which I believe to be this species, unfortunately it escaped. It was in a forest glade at the summit.

Native name. Homboka (Kipokomo).

Variation. Midbody scale-rows 15; ventrals 151–171; anals 2; subcaudals 92–109; labials 8, the 4th and 5th entering the orbit; preocular 1; postoculars 2; temporals 1 + 1 except for the Nairobi snake which had 1 + 2.

Measurements. The largest ♂ (M. C. Z. 40519) measures 735 (500 + 235) mm., the largest ♀ (M. C. Z. 40515) measures 723 (553 + 170) mm. but the tip of its tail is missing.

Breeding. The females taken at Peccatoni on May 24, held 5 eggs measuring 17 x 5 mm. and 7 eggs measuring 18 x 9 mm. respectively. The Ngatana ♀ held 6 eggs measuring 23 x 8 mm. on June 12, 1934.

Diet. One Peccatoni snake had swallowed two juvenile frogs (*Rana edulis*).

Habitat. I captured one of the Peccatoni snakes far out among the lily pads of a swamp where it was hunting frogs, the other was associated with a couple of Spotted Wood Snakes (*Philothamnus s. semivariegatus*) in a small doom palm growing in knee-deep water in this same flood area.

Chlorophis irregularis (Leach)

Coluber irregularis Leach, 1819, in Bowdich, Miss. Ashantee, p. 494: Ashanti, Gold Coast.

Ahaetulla emini Günther, 1888, Ann. Mag. Nat. Hist. (6), **1**, p. 325: Monbuttu, Belgian Congo.

Chlorophis schubotzi Sternfeld, 1912, Wiss. Ergebn. Deut. Zentral-Afrika-Exped., 1907–1908, **4**, p. 269, fig.: Bwanja, near Bukoba, Tanganyika Territory.

5 (M. C. Z. 40523–7) Mt. Debasien, U. 18–30.xi.33.
6 (M. C. Z. 40510–4, 40529) Kaimosi, K. C. 12.ii–1.iii.34.

Native name. Emun (Karamojong), but not specific.

Variation. Midbody scale-rows 15; ventrals 161–184; anal divided except in M. C. Z. 40525 in which it is single though this snake is undoubtedly correctly referred to *irregularis*; subcaudals 98–122; labials 9, the 4th, 5th and 6th entering the orbit on seventeen sides (8 snakes normal), or 8, the 3rd, 4th and 5th entering the orbit on six sides, or 7, the 3rd, 4th and 5th entering the orbit on one side; preoculars 1, or 2 in M. C. Z. 40525, in contact with, or separated from the frontal; postoculars 2, or 4 in M. C. Z. 40524; temporals 1 + 1 on nineteen sides, 1 + 2 on three sides.

Measurements. The largest ♂ (M. C. Z. 40523) measures 769 (548 + 221) mm., the largest ♀ (M. C. Z. 40514) measures 774 (547 + 227) mm.

Habitat. On Mount Debasien, I captured one snake as it was basking on the bank of a dry water course at 6,000 feet, another in vegetation on the bank of the Amaler River at 5,000 feet.

Philothamnus semivariegatus semivariegatus Smith

Philothamnus semivariegatus A. Smith, 1849, Illus. Zoöl. S. Africa, **3**, pls. lix, lx, lxiv: Bushman's Flats and Kurrichane, S. Africa.

1 (M. C. Z. 40528) Mount Debasien, U. 24.xi.33.
1 (M. C. Z. 40530) Kibwezi, K. C. 23.iii.34.
3 (M. C. Z. 40531–3) Mt. Mbololo, K. C. 18.iv.34.
3 (M. C. Z. 40534–6) Lamu, Lamu Id., K. C. 8.v.34.
3 (M. C. Z. 40537–9) Peccatoni, K. C. 26.v.34.
4 (M. C. Z. 40540–3) Ngatana, K. C. 11.vi.34.
2 (M. C. Z. 40544–5) Malindi, K. C. 30.vi.34.

Distribution. Also from Sokoki Forest (H. J. A. T.).

Native names. *Ekumbu* (Kitaita, but also applied to the Boomslang); *kongoani* and *ukutiwiti* (Kiamu); *hasowitu* (Kipokomo).

Variation. Midbody scale-rows 15, except for M. C. Z. 40530 which has 13 though this snake exhibits the normal number an inch in advance of midbody; ventrals 164–196; anals 2; subcaudals 130–160; labials 8–10, though 8 only on the right side of M. C. Z. 40544 which has the 5th and 6th labials fused, and 10 on the right side of M. C. Z. 40539, 5th and 6th labials entering the orbit except on the right side of M. C. Z. 40544 where it is the 5th only, and three snakes (Nos. 40533, 40538, 40545) where the 4th, 5th and 6th enter either on both sides, or left only, or right only; preoculars 1, except M. C. Z. 40542 which has 2; postoculars 2, except on the right side of M. C. Z. 40528 where there are 3; temporals 2 + 2, except M. C. Z. 40535 which has 1 + 2 and M. C. Z. 40534, 40536 which have 2 + 1, all these last three variants being from Lamu Island.

Measurements. The largest ♂ (M. C. Z. 40545) measures 1032 (650 + 382) mm., the largest ♀ (M. C. Z. 40534) measures 1233 (785 + 448) mm.

Breeding. Three eggs measuring 32 x 10 mm. were taken from a Lamu snake on May 8, 1934; three others measuring 25 x 6 mm. present in the Malindi female on June 30, 1934.

Diet. A gecko (*Lygodactylus p. gutturalis*) in the young Spotted Wood Snake from Mount Debasien, two (*L. p. nombasicus*) in the Kibwezi and one in the Mount Mbololo reptiles; two geckos (*Hemidactylus persimilis*) in a Lamu snake; two geckos (*H. mabouia*) in one from Malindi, a frog (*Rana o. oxyrhynchus*) in the other.

Enemies. One was recovered from the stomach of the rare Banded Harrier Eagle (*Circaëtus fasciolatus*) at Ngatana.

Habitat. The Debasien snake was very cleverly ascending the trunk of a big fig tree; one Peccatoni snake was in a doom palm with *Chlorophis neglectus*, I caught another among water plants in waist-deep water, where it was presumably hunting frogs. Yet another was cap-

tured near Witu at 8 p.m., it was in a bramble bush within a foot of a tree frog (*Chiromantis xerampelina*) which it was apparently stalking. The bush was growing in knee-deep water and I had to reach up to seize the snake which I transferred to my handkerchief pocket, stuffing the handkerchief in on top to detain it: on reaching camp, however, I found that the snake had departed without my knowledge.

Hapsidophrys lineata Fischer

Hapsidophrys lineata Fischer, 1856, Abhand. Nat. Ver. Hamburg, **3**, p. 111, pl. ii, fig. 5: Elmine, West Africa, *i.e.* Elmina, Gold Coast.

3 (M. C. Z. 40546–8) Kaimosi, K. C. 15–19.ii.34.

Distribution. The Coryndon Museum has a specimen from Kedowa, on the Kenya-Uganda Railway, west of Kisumu.

Variation. Midbody scale-rows 15; ventrals 158–166; anal 1; subcaudals 93–98; labials 8, the 4th and 5th entering the orbit; preocular 1; postoculars 2–3; temporals 2 + 2, or 2 + 1 in M. C. Z. 40546.

Measurements. The largest of these three females (M. C. Z. 40546) measures 974 (700 + 274) mm.

Breeding. The large ♀ held four eggs measuring 16 x 5 mm. on February 19.

Diet. In her stomach was a frog (*Rana f. chapini*).

Thrasops jacksonii jacksonii Günther

Thrasops Jacksonii Günther, 1895, Ann. Mag. Nat. Hist., (6), **15**, p. 528: Kavirondo, Kenya Colony.

Thrasops Rothschildi Mocquard, 1905, Bull. Mus. Paris, **11**, p. 287: "Afrique orientale anglaise."

3 (M. C. Z. 40680–2) Sipi, Mt. Elgon, U. 14–15.xii.33.
5 (M. C. Z. 40551–2, 40683–5) Butandiga, U. 8–11.i.34.
3 (M. C. Z. 40550, 40686–7) Kaimosi, K. C. 25–28.ii.34.

Native names. *Yakobe* for black adults, *isilukanga* for dark olive adults and half-grown (Lugishu).

Synonymy. The type of *jacksonii* had 19 midbody scale-rows; 198 ventrals; 138 subcaudals. The type of *rothschildi*, which may have come from either Kenya or Uganda, had 17 midbody scale-rows; 187 ventrals; 141 subcaudals. Both types were uniformly black.

Peracca (1909, p. 172) shows the extraordinary variation in head shields exhibited by a pair (♂ ♀) obtained at Toro, Uganda.

Schmidt (1923, p. 85, Fig. 6) gives by far the best account of variation in *jacksonii*, his remarks being based on eighteen snakes from the Belgian Congo. It is important to note that of these, sixteen had 19 midbody scale-rows, one had 17, one had 21; ventrals 192–211; subcaudals 135–155. His figure shows that there is in reality no difference in rostral and frontal characters between *jacksonii* and *rothschildi* or Lönnberg's snakes from Mount Kenya.

In each of the series listed above—Sipi, Butandiga and Kaimosi—there is one snake with 17 midbody scale-rows, the others having 19. This appears to show a tendency in the eastern part of the range for a reduction in the number of midbody scale-rows. One of the Kaimosi series (M. C. Z. 40550), coming as it does from a spot bordering on the type locality of *jacksonii*, has a scale count almost identical with that of the type of *rothschildi*. It has 17 midbody scale-rows; 190 ventrals; 141 subcaudals. I consider, therefore, that *rothschildi* is a synonym of *jacksonii*.

Variation. Midbody scale-rows 17–19; ventrals 188–202; anal divided; subcaudals 130–144; labials 8, the 4th and 5th entering the orbit, except on left side of M. C. Z. 40686 which has 9 with 4th and 5th entering, and M. C. Z. 40552 which has 9 with 5th and 6th entering on both sides of the head; preoculars 1, or 2 in three snakes only; postoculars 3; temporals 1 + 1.

Measurements. The largest ♂ (M. C. Z. 40681) measures 1637 (1140 + 497) mm., the largest ♀ (M. C. Z. 40683) measures 1797 (1275 + 522) mm., but is surpassed in length from snout to anus by 38 mm. in a snake with mutilated tail.

Breeding. The undermentioned records of developing eggs were taken.

Sipi,	December 14, 1933,	a ♀	held	12	eggs	measuring 19 x 8 mm.
Butandiga,	January 8, 1934,	"	"	10	"	" 31 x 16 mm.
"	" 8, 1934,	"	"	7	"	" 35 x 8 mm.
"	" 11, 1934,	"	"	8	"	" 23 x 9 mm.

Diet. One Sipi snake had mouse fur in its stomach, the Butandiga specimens (1) a tree rat (*Cenomys b. editus*), (2) bird, (3) *Chamaeleon senegalensis*, (4) *Chamaeleon b. höhnelii*.

Coronella semiornata semiornata Peters

Coronella semiornata Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 622: Tete, Mozambique.

Zamenis fischeri Peters, 1879, Monatsb. Akad. Wiss. Berlin, p. 777: Malindi, Kenya Colony.

Coronella inornata Fischer, 1884, Jahr. Hamburg, Wiss. Anst. **1**, p. 6, pl. i, fig. 2: Masailand, near Arusha, Tanganyika Territory.

Coronella scheffleri Sternfeld, 1908, Sitzber. Ges. Naturf. Freunde Berlin, p. 93; and 1908, Mitt. Zoöl. Mus. Berlin, **4**, p. 243, figs. 1 and 2: Kibwezi, Kenya Colony.

Coronella semiornata var. *mossambicae* Cott, 1935 (1934), Proc. Zoöl. Soc. London, p. 967: Charre and Fambani, Mozambique.

♀ (M. C. Z. 40553) Kibwezi, K. C. 29.iii.34.

Synonymy. *C. scheffleri* was based on an individual which was said to differ from *semiornata* in its more projecting snout, the preocular being separated from the frontal, the rostral (originally stated to be as deep as broad) only slightly broader than deep, the more numerous subcaudals.

C. scheffleri had 91 subcaudals, the range for *semiornata* given by Boulenger (1894, p. 195) who only had three specimens, 63–88, my topotype of *scheffleri* has 88, other Kenya-Tanganyika material I have examined range from 71–91. The latter figure being reached by a snake from the Ulukenya Hills which I referred to (1929, p. 26) as an intermediate. The character of the preocular being separated from, or in contact with, the frontal is of no significance in this species where both conditions occur in the same locality, even in the same specimen (M. C. Z. 23067). From Sternfeld's figures I am inclined to think that it is the frontal that is shortened rather than the snout which is lengthened in his type, the frontal length in *scheffleri* equals its distance from the rostral whereas normally in all our *semiornata* it is greater than its distance from the end of the snout. The topotype is normal in this respect in view of which I think that *scheffleri* may be considered a slightly abnormal individual.

In describing *mossambicae* Colt was under the assumption that his specimens resulted in a considerable extension of the range of *semiornata*. He overlooked the fact that the type came from Tete, some 125 miles from Charre. His specimens agree well with the fine colored plate xvii, fig. 2 furnished by Peters in the Reise nach Mossamb., **3**, (1882), but indeed the markings on which alone he bases the race are subject to considerable variation by the intermediate bars becoming obsolescent.

Measurement. This ♀ measures 484 (366 + 118) mm.

Breeding. She held two eggs measuring 40 x 8 mm. in her oviducts.

Variation. Midbody scale-rows 21; ventrals 196; anals 2; subcaudals 88; labials 8, the 4th and 5th entering the orbit on the right, or 9, the 5th and 6th entering the orbit on the left; preoculars 2 and 1 (right and left respectively); postoculars 2; temporals 2 + 3 (right, like *scheffleri*) or 2 + 2 (left, like *semiornata*).

Kibwezi is on the edge of the red laterite country so that it is not surprising to find this snake presenting an anomalus scalation intermediate between the typical form, with which it agrees in coloring, and the recently described race *C. s. fuscorosea.*

Coronella semiornata fuscorosea Loveridge

Coronella semiornata fuscorosea Loveridge, 1935, Bull. Mus. Comp. Zoöl., **79**, p. 8: Mount Mbololo, Taita, Kenya Colony.

3 (M. C. Z. 40555–7) Mt. Mbololo, K. C. 25.iv.34.
1 (M. C. Z. 40554) Tsavo, K. C. 2.iv.34.

Affinities. When describing this snake, it was with some misgivings that I referred it to the genus Coronella. While its nearest relative actually appears to be *C. semiornata*, the question arises as to whether the tropical African snakes *semiornata, coronata,* etc., are really congeneric with the palearctic *austriaca, amaliae* and *girondica* which represent true Coronella, *austriaca* being the genotype. These palearctic species have a broad, shield-shaped frontal.

The tropical African species, and Dr. Malcolm Smith informs me that the Indian species *brachyura* agrees with them in this respect, have a more elongate, concave-sided frontal, in which they agree with *Coluber florulentus* of North Africa and Northern Kenya as well as with the genotype *Coluber c. constrictor* of North America.

Boulenger (1894, p. 3) separated Zamenis (i.e. Coluber for our purposes) from Coronella on the following characters:

Head elongate, distinct from neck. Subocular present. . . . . Zamenis
Head not or but slightly distinct from neck. No subocular. . Coronella

The head of *florulentus* is unappreciably longer and not more distinct from the neck than is that of *semiornata* or *fuscorosea.* The scale termed subocular in *constrictor* and *florulentus* by Boulenger, might equally well be called a lower preocular, Dr. E. R. Dunn suggests subpreocular for this scale which I called a lower preocular when describing *fuscorosea.*

The markings on the young Tsavo paratype (they disappear entirely in the adult) bear so strong a resemblance to those of *florulentus* that

I cannot help thinking that *fuscorosea* is derived therefrom, forming a connecting link between that species and *semiornata* and the other socalled Coronellae forming the tropical African group. The cranial characters which Boulenger (1913, p. 47) subsequently utilized in distinguishing Zamenis and Coronella also lead one to suspect that these tropical African forms have little in common with Coronella of Europe and North Africa.

I am not transferring them to Coluber at the present time for such action should be based on a thorough revisionary study of the whole genus Coluber and certain closely related genera. Precipitate action might result in ultimate confusion.

Habitat. The juvenile, taken on the banks of the Tsavo River near the station, had its head protruding from a hole at the base of a leafless, scrubby bush. It promptly withdrew into the burrow from which I dug it out. According to the natives, no rain had fallen for a year, and though only about 9 a.m. the weather was intensely hot.

Coronella coronata (Schlegel)

Calamaria coronata Schlegel, 1834, Phys. Serp., **2**, p. 46: Gold Coast.
Meizodon regularis Fischer, 1856, Abhand. Nat. Ver. Hamburg, **3**, p. 112, pl. iii, fig. 3: Peki, Gold Coast.
Coronella regularis praeornata Angel, 1933, "Les Serpentes de l'Afrique occidentale Francaise." Paris, p. 123: West Africa and Uganda.

1 (M. C. Z. 40323) Kau, Tana River, K. C. 4.vi.34.
1 (M. C. Z. 40559) Ngatana, Tana River, K. C. 12.vi.34.
1 (M. C. Z. 40558) Golbanti, Tana River, K. C. 22.vi.34.

Distribution. These three snakes constitute the first records of the occurrence in Kenya of *coronata* (or *regularis*) but are in keeping with other elements of a West African fauna surviving along the Tana River close to the Indian Ocean.

Affinities. Boulenger (1894, p. 190) was illogical in keeping *regularis* distinct from *coronata*. He separated them as follows:

Four lower labials in contact with an anterior chin-shield; belly yellow *coronata*
Five lower labials in contact with an anterior chin-shield; belly blackish *regularis*

yet of its East African ally, *C. semiornata*, he writes (p. 195):

"four or five lower labials in contact with the anterior chin-shields ventrals yellowish, uniform or edged with black."

As previously stated (1929, p. 27), I agreed with Schmidt (1923, p. 87) that *regularis* should probably be united with *coronata*. The additional evidence furnished by the Tana River snakes makes this necessary for they continue the combination of the alleged key characters to which Schmidt and I have already invited attention.

The three snakes listed above agree with *regularis* in having five lower labials in contact with an anterior chin-shield, but with *coronata* in having immaculate bellies only impinged upon laterally by the olive dorso-lateral coloration.

More recently, Angel has named a striking color variant whose range, however, appears to be coextensive with that of *regularis* and therefore without geographical significance. I would suggest that his two specimens may be examples in which the juvenile coloring has persisted into later life.

Variation. Midbody scale-rows 19; ventrals 168–176; anal divided; subcaudals 65–74; labials 8, the 4th and 5th entering the orbit; preocular 1; postoculars 2–3; temporals 1 + 2.

Coloration. So closely did these snakes resemble *Natrix o. olivacea* that I failed to distinguish them in the field. The absence of dark pigmentation on the labial sutures and the much more numerous ventrals serve at once to distinguish them.

It might also be remarked that the coloring of these Tana River *coronata* is duplicated by that of a Dar es Salaam specimen of *semiornata* which, moreover, has 1 + 2 temporals on the right side of the head; on the left, however, it has the normal 2 + 2 and its midbody scale-rows are 21.

Measurements. The largest ♂ (M. C. Z. 40558) measures 322 (247 + 75) mm., the ♀ (M. C. Z. 40323) measures 520 (410 + 110) mm.

Prosymna ambigua stuhlmanni (Pfeffer)

Ligonirostra stuhlmanni Pfeffer, 1893, Jahr. Hamb. Wiss. Anst., **10**, p. 78, pl. i, figs. 8–10: Usambara, Tanganyika Territory.

Prosymna variabilis Werner, 1909, Jahr. Nat. Ver. Wurttemb., **65**, p. 57: Moshi, Tanganyika Territory.

♀ (M. C. Z. 40560) Mapenya, near Witu, K. C. 28.v.34.
♂ (M. C. Z. 40561) Mkonumbi, K. C. 28.v.34.
♂ ♀ (M. C. Z. 40562–3) Ngatana, K. C. 20.vi.34.

Distribution. To the best of my belief these specimens constitute the first record of the genus in Kenya Colony.

Affinities. Boulenger (1894, p. 248) synonymized *stuhlmanni* with *ambigua* from Angola. The type of the latter, however, had 17 midbody scale-rows while the cotypes of *stuhlmanni,* as well as a dozen specimens from East Africa which I have examined, have 15. Furthermore, Mr. H. W. Parker writes on February 26, 1935 that there are 16 specimens in the British Museum from Zanzibar; Mombasa; Eastern Province, Uganda; Shire Valley; Mazoë, Rhodesia; and Kosi Bay, Zululand all with 15 midbody scale-rows. It seems reasonable, therefore, to recognize an eastern race characterized by 15 midbody scale-rows. Those with 15 range to Garamba, Belgian Congo (Schmidt, 1923, p. 89).

Barbour and Loveridge (1928, p. 121) and I (1933, p. 244) have referred to this matter before, suggesting that the name *bocagii* Boulenger from the Congo might be used. Apart from the fact that *stuhlmanni* has four years' precedence, I note that *bocagii* has a slightly more numerous ventral count than *stuhlmanni* and must be regarded as distinct.

Variation. Midbody scale-rows 15; ventrals 134–152; anal 1; subcaudals 20–32; labials 6, the 3rd and 4th entering the orbit; preocular 1, so minute on the left side of the head in M. C. Z. 40562 as to permit the prefrontal entering the orbit as in *bocagii;* postoculars 2 or 1 in M. C. Z. 40563 only; temporals 1 + 2 except in M. C. Z. 40560 where it is 1 + 1 as the lower temporal is fused with a labial.

Sexual differences. Sexes of this species, as judged by the counts of eight males and seven females, may be readily distinguished by the ventral and subcaudal range, *viz.*

Males have 133–140 ventrals and 30–34 subcaudals.

Females have 140–152 ventrals and 19–24 subcaudals.

Breeding. The Mapenya ♀ held three eggs measuring 20 x 6 mm. on May 28, 1934.

Measurements. The larger ♂ (M. C. Z. 40562) measures 238 (200 + 38) mm., the larger ♀ (M. C. Z. 40563) measures 254 (232 + 22) mm.

Scaphiophis albopunctatus Peters

Scaphiophis albopunctatus Peters, 1870, Monatsb. Akad. Wiss. Berlin, p. 645, pl. i, fig. 4: Kita, Guinea (*i.e.* French West Africa).

2 (M. C. Z. 39953–4) Sokoki Forest, K. C. 1932.

These two juvenile snakes are from a series of ten collected by Mr. H. J. Allen Turner, the rest are in the Coryndon Memorial Museum, Nairobi.

Affinities. I would suggest that the recently described *S. calciatii* Calabresi from near Cunama, Eritrea is a synonym of *S. raffreyi* Bocourt from Ethiopia, and that Boulenger (1894, p. 254) was in error in referring the latter to the synonymy of *albopunctatus.* Both Bocourt and Calabresi stress the same points of difference between their new species and *albopunctatus.*

Variation. Midbody scale-rows 23; ventrals 192–207; anals 2; subcaudals 57–69; labials 5; suboculars 3; preocular 1; postoculars 2 or 3 on right side of M. C. Z. 39954; temporals 4 + 5 or 5 + 5 on left side of M. C. Z. 39953; lower labials in contact with an anterior chin shield 3.

Coloration. Pale gray flecked and spotted with white, this juvenile coloring is very different from that of the adult.

Measurements. The larger, apparently a ♀, measures 402 (342 + 60) mm.

DASYPELTINAE

Dasypeltis scaber (Linnaeus)

(Plate 4, fig. 1)

Coluber scaber Linnaeus, 1766, Syst. Nat., 1, p. 384: Indiis.

10 (M. C. Z. 40564–73) Sipi, U. 13–23.xii.33.
1 (M. C. Z. 40574) Butandiga, U. 12.i.34.
1 (M. C. Z. 40575) Elgonyi, K. C. 30.i.34.
4 (M. C. Z. 40576–9) Kaimosi, K. C. 10–16.ii.34.
1 (M. C. Z. 40580) Mt. Mbololo, K. C. 28.iv.34.
2 (M. C. Z. 40581–2) Lamu Id., K. C. 12.v.34.
1 (M. C. Z. 40583) Near Witu, K. C. 30.v.34.
1 (M. C. Z. 40584) Laini, Tana R., K. C. 6.vi.34.
1 (M. C. Z. 40585) Ngatana, K. C. 16.vi.34.

Distribution. Also 1 from Sokoki Forest (H. J. A. T.).

Native names. Namagi (Lugishu); *lucha* (Kipokomo).

Variation. The Mount Mbololo snake differs from all the others in having 2 preoculars and 3 + 5 temporals and in its coloring which was a bright coral pink above, paler pink below. This coloring harmonizes with the reddish soil of the region. The data of the rest of the series is as follows.

Midbody scale-rows 22–25; ventrals 208–232; anal 1; subcaudals 50–96, this last count, which I have rechecked, surpasses the range given by Boulenger (1894, p. 355), is of the ♂ snake from Lamu; labials 7, the 3rd and 4th entering the orbit, or 6 due to the fusion of

5th and 6th in M. C. Z. 40576 and on left side of M. C. Z. 40578; preocular 1 except as noted above; postoculars 1–2, five Sipi and one Kaimosi snake have a single postocular, twelve snakes have 2, the rest are azygous intermediates; temporals 1 + 3 (M. C. Z. 40579 only), 2 + 2 on ten sides, 2 + 3 on twenty-seven sides, 2 + 4 on four sides, 3 + 5 (M. C. Z. 40580 only).

Coloration. Wholly black specimens at Sipi and Kaimosi; uniform brown above at Sipi and Butandiga; bright coral pink on Mount Mbololo; uniform gray on Lamu Island; rhomboidal dorsal markings (var. B. of Boulenger) at Laini and Ngatana; rhomboidal dorsal markings and also ventrals conspicuously edged with black at Witu; rhomboidal dorsal markings confluent with lateral bars (var. E) on the young Elgonyi snake.

Measurements. The largest ♂ (M. C. Z. 40570), a brown one, measures 615 (518 + 97) mm., the largest ♀ (M. C. Z. 40564), a black one, measures 825 (725 + 100) mm.

Breeding. At Sipi a female held numerous eggs measuring 16 x 5 mm. on December 23, 1933; at Kaimosi another held fourteen eggs measuring 17 x 8 mm. on January 16, 1934.

Diet. One large Sipi female had her stomach and intestines distended with quantities of yolk, in bulk about equalling the contents of three hen's eggs.

Parasites. She was heavily parasitized with encysted nematodes.

BOIGINAE

Crotaphopeltis hotamboeia hotamboeia (Laurenti)

Coronella hotamboeia Laurenti, 1768, Syn. Rept., p. 85: India orientali, *i.e.* Africa.

1 (M. C. Z. 40586) Mt. Debasien, U. 20.xi.33.
2 (M. C. Z. 40587–8) Mt. Mbololo, K. C. 17.iv.34.
1 (M. C. Z. 40589) Lamu Island, K. C. 14.v.34.
2 (M. C. Z. 40590–1) Peccatoni, K. C. 26.v.34.
2 (M. C. Z. 40592–3) Near Witu, K. C. 31.v.34.
1 (M. C. Z. 40594) Kau, Tana R., K. C. 4.vi.34.
18 (M. C. Z. 40595–611) Ngatana, K. C. 16–21.vi.34.
7 (M. C. Z. 40612–7) Golbanti, K. C. 22.vi.34.

Distribution. Seen also at Kibwezi and Malindi.

Native names. Bafu (Kitaita); *goomugalla* (Kipokomo). See also remarks under *Natrix o. olivacea.*

Variation. Despite the amazing amount of variation displayed by this coastal series of the White-lipped Snake, they are consistently of the typical lowland form with 19 midbody scale-rows and usually 1 preocular and 2 postoculars.

Midbody scale-rows 19; ventrals 157–174; anal single; subcaudals 40–65, Boulenger (1894, p. 90) gives 32–54 as the subcaudal range but half the above series are between 55–65; labials 6–9, all but nine sides, however, are the normal 8, the 3rd and 4th (two sides), the 3rd, 4th and 5th (15 sides), the 4th and 5th (42 sides), the 4th, 5th and 6th (5 sides), or the 5th and 6th (2 sides) entering the orbit, it will be observed that there is a strong tendency in this region for the 4th and 5th only to enter the orbit, this is in marked contrast to the thirty-four snakes collected by me (1933, p. 247) in the Central Lake Region which, without exception, had the 3rd, 4th and 5th entering the orbit as is normal for the species according to Boulenger (1896, p. 89); preoculars 1–2, the latter on the right side only of a Lamu snake and both sides on two Ngatana and a Golbanti reptile; postoculars 2–3 the latter on right side only of M. C. Z. 40588; frontal invariably well-separated from the preocular by the supraocular; temporals 1 + 1 (6 sides), 1 + 2 (59 sides), 1 + 3 (1 side); lower labials in contact with an anterior chin-shield 4 (9 sides), 5 (54 sides) or 6 (3 sides).

Coloration. These snakes do not display the white flecks so usual in snakes from further south. When about to cast their epidermis it becomes a smoky blue-gray, obscuring the usual black ground color.

On capturing the first Mbololo snake, though at 3,800 feet in a rotten log at the edge of the rain forest, I observed that the iris of its eye was grayish olive, *not* red, so was quite prepared on later examination to find that, with the exception of three postoculars on the right side of its head, its scale characters were those of the typical, or lowland, form.

Measurements. The largest ♂ (M. C. Z. 40595) measures 564 (470 + 94) mm., the largest ♀ (M. C. Z. 40587) measures 519 (446 + 73) mm.

Sex. This does not appear to be determinable from scale counts, thus fifteen males have a ventral count of 157–166 and subcaudal of 44–65; twelve females have from 159–174 ventrals and 40–54 subcaudals.

Breeding.	The Kau	♀	held	several	eggs	measuring	13 x 4 mm.	on June 4.
	An Ngatana	♀	"	4	"	"	27 x 12 mm.	" 16.
	"	♀	"	6	"	"	17 x 7 mm.	" 17.
	"	♀	"	3	"	"	32 x 8 mm.	" 17.
	A Golbanti	♀	"	5	"	"	35 x 11 mm.	" 26.

It should be added that only two of the batch of three eggs reached the dimensions given, the third egg was considerably smaller. Contrary to what one usually finds, the female producing the small compliment of four eggs was of large size, measuring 500 mm. over all.

Diet. A Peccatoni snake held amphibian bones; one from Ngatana had swallowed both a frog (*Rana m. mascareniensis*) and a toad (*Bufo steindachnerii*); toads of this species were also recovered from the stomachs of two Golbanti reptiles.

Parasites. A tapeworm (*Ophiotaenia crotaphopeltis*) was taken from the alimentary tract of a Golbanti snake in whose stomach were worms.

Habitat. The young Debasien snake was cut in half by one of my men engaged in cutting down grass on the bank of the Amaler River at 5,000 feet, another of similar size was found on the river bank, dead and macerated. The Lamu specimen was taken in a garden. In addition to those captured at Peccatoni, was a young one which escaped me, it was lying at the base of a bussu palm in a swampy area flooded by the recent heavy rains.

Chamaetortus aulicus aulicus Günther

Chamaetortus aulicus Günther, 1864, Proc. Zoöl. Soc. London, p. 310, pl. xxvi, fig. 2: Zambesi.

♀ (M. C. Z. 40619) Kibwezi, K. C. 30.iii.34.
♂ (M. C. Z. 40620) Ngatana, K. C. 17.vi.34.

Distribution. This rare snake has previously been recorded from Kibwezi by Sternfeld (1908, p. 244), constituting, I believe, the first record of its occurrence in Kenya Colony. A second example, now in the Coryndon Memorial Museum, was obtained by Mr. H. J. Allen Turner at Fundi Isa, north of Malindi, in June 1932.

Native name. Tambasi (Kipokomo).

Affinities. Trinomials are employed on account of *C. a. ellenbergeri* Chabanaud, 1917 (1916) from Lambarené, Congo. It differs from the typical form in the preocular being in contact with the frontal; labials 9, the 4th, 5th and 6th entering the orbit; ventrals 209; subcaudals 95 and its color, a uniform greyish brown.

Variation. Midbody scale rows 17; ventrals 178–187; anal single; subcaudal 93 on ♀; labials 8, the 3rd, 4th and 5th entering the orbit; preocular 1 + the loreal which enters the eye; postoculars 2; temporals 1 + 1; lower labials in contact with an anterior chin shield 4–5.

Measurements. The ♂ has the tip of its tail lacking. The ♀ measures 607 (458 + 149) mm.

Hemirhagerrhis kelleri Boettger

Hemirhagerrhis kelleri Boettger, 1893, Zoöl. Anz., **16**, p. 129: Webi Jhal, Abdallah and south of Ogaden, Ethiopia.

Amplorhinus taeniatus Sternfeld, 1908, Mitt. Zoöl. Mus. Berlin, **4**, p. 244, fig. 3. and 1910, Fauna der deutschen Kolonien, **3**, Die Schlangen Deutsch-Ostafrika, p. 27 (reprint), fig. 27: Lamu Island, Kenya Colony.

1 (M. C. Z. 40621) Mkonumbi, K. C. 28.v.34.

Distribution. This specimen is almost topotypic of Sternfeld's *A. taeniatus,* for Mkonumbi is on the mainland almost opposite Lamu Island and there is a daily dhow service between the two during most of the year.

The specimen of *kelleri* listed by Boulenger (1896, p. 649) as collected by the late Sir F. J. Jackson in Uganda, is now M. C. Z. 26928. In view of the fact that Jackson visited Witu, eighteen miles inland from Mkonumbi, and that other herpetological material which he collected on his journey to Uganda was erroneously attributed to 'Uganda' (*e.g. Chamaeleon jacksoni* Boulenger from Kikuyu), I think that we are justified in believing that this snake was taken in what is now called Kenya Colony. I mention this here as my reason for omitting *kelleri* from the Uganda list.

A snake in the Nairobi Museum (No. I 100) without locality, was erroneously referred by me (1916, pp. 80 and 85) to *H. kelleri.* On recent examination I find that it is an example of *Pseudoboodon lemniscatus* of Ethiopia. Whether it was taken on the Kenya side oft he Kenya-Ethiopian boundary is of course uncertain, though likely, but until substantiated *P. lemniscatus* cannot be admitted to the Kenya list.

Sternfeld (1908a, *loc. cit. supa.* p. 243), in his introduction to the paper in which he described *Amplorhinus taeniatus* and *Rhinocalamus meleagris* makes acknowledgement to various authors for material, among them "Denhardt (Lamu, Pokomonie)." Though he gives localities for the thirty-five other species mentioned in the paper, strangely enough he omits mention of the type localities of the two mentioned above. Later in the year, however, he added "Lamu Island."

It should be remembered that "Lamu" formerly was applied to the mainland opposite the island, later being called "Lamu district," at the same time it was applicable to the township of Lamu, Lamu Island. "Pokomonie" which literally means the "place of the Pokomo

tribe" is the name of a creek close to Wange where Denhardt had an abortive coconut plantation. This is that Wange which Stejneger (1893, p. 712) was misled in placing on Manda Island opposite the creek. No Wapokomo live on the creek today, the tribe being restricted to a narrow strip bordering the Tana River from Kidori (1 S.) to Charra 2° 30 ′ S.) near the mouth of the river. This is the region generally known today as Pokomoni.

While it is true that Gustav Denhardt's headquarters were on Lamu Island, I visited his plantation and house, the latter in a semi-ruinous state, he and his brother had numerous interests on the mainland in addition to the Wange venture. I learned that he made several business trips up the Tana River. While it is entirely possible that the snakes which became the types of *taeniatus* and *meleagris* may have been accidentally introduced into Lamu, possibly with the fuel which constituted another of Denhardt's business undertakings, it seems more probable that a burrowing type like Rhinocalamus would have been taken at Wange, along the Pokomoni creek, or in the Pokomo country bordering the Tana.

The fact that I spent a week in searching for these two species on Lamu Island without finding them, is no proof that they do not occur there, but in view of the vagueness attaching to the localities on other Denhardt material, it is at least possible that they were taken at Lamu in its mainland sense, if not Pokomonie.

Variation. Midbody scale-rows 17; ventrals 157; anals 2; subcaudals 78; labials 8, the 4th and 5th entering the orbit; preoculars 2 on the right, 1 on the left side; postoculars 2; temporals 2 + 3.

Measurements. Total length 212 (162 + 50) mm.

Rhamphiophis rubropunctatus (Fischer)

Dipsina rubropunctata Fischer, 1884, Jahr. Hamburg. Wiss. Anst., **1**, p. 7, pl. i, fig. 3: Near Arusha at the foot of Kilimanjaro, Tanganyika Territory.

1 (M. C. Z. 40650) Voi, K. C. 23.iv.34.
♀ (M. C. Z. 40651) Mt. Mbololo, K. C. 27.iv.34.

Native names. The Wataita distinguish the spotted young from the uniform adult under the names of *manganga* (young) and *ngunuku* (adult).

Variation. Midbody scale-rows 19; ventrals 235–237; anal divided; subcaudals 149–154; labials 8–9, the 4th and 5th or 5th and 6th entering the orbit; preoculars 2; postoculars 2; loreal 1; temporals 2 + 4, 3 + 4, or 4 + 4.

Measurements. The ♀ measures 1608 (1092 + 516) mm., and appears to be the largest recorded example of this rare species.

Rhamphiophis rostratus Peters

Rhamphiophis rostratus Peters, 1854, Monatsb. Akad. Wiss. Berlin, p. 624; 1882, Reise nach Mossamb., **3**, p. 124, pl. xix, fig. 1: Tete; Mesuril; Quitangonha, Mozambique.

2 (M. C. Z. 40652–3) Voi, K. C. 24–27.iv.34.
3 (M. C. Z. 40654–6) Lamu Island, K. C. 7.v.34.
1 (M. C. Z. 40657) Peccatoni, K. C. 26.v.34.
1 (M. C. Z. 40658) Mkonumbi, K. C. 28.v.34.
1 (M. C. Z. 40659) Witu, K. C. 31.v.34.

Distribution. Also 2 from Sokoki Forest ((H. J. A. T.)

Native names. Kitangu (for adults) and *mbono* (for spotted young) iu Kiamu.

Variation. Midbody scale-rows 17; ventrals 154–187; anal divided; subcaudals 90–118; labials 8, the 5th only entering the orbit; preoculars 3 (ten sides) or 4 (six sides); postoculars 2 except on the left side of M. C. Z. 40659 where there are 4; temporals 2 + 3, rarely 2 + 4 (three sides).

Measurements. The largest ♂ (M. C. Z. 40659) measures 1025 (715 + 310) mm., the largest ♀ (M. C. Z. 40652) measures 1334 (922 + 412) mm.

Diet. A very young snake from Peccatoni had the limbs of a frog (? *Kassina senegalensis*) in its stomach.

Psammophis sibilans (Linnaeus)

Coluber sibilans Linnaeus (part), 1766, Syst. Nat., 12th ed., **1**, p. 383: "Asia".

5 (M. C. Z. 40622–6) Sipi, U. 13–27.xii.33.
1 (M. C. Z. 40627) Butandiga, U. 8.i.34.
4 (M. C. Z. 40628–31) Bukori, K. C. 18.i.34.
1 (M. C. Z. 40632) Kaimosi, K. C. 1.iii.34.
1 (M. C. Z. 40633) Kibwezi, K. C. 23.iii.34.
1 (M. C. Z. 40634) Voi, K. C. 12.iv.34.
2 (M. C. Z. 40635–6) Mt. Mbololo, K. C. 17.iv.34.
1 (M. C. Z. 40637) Golbanti, K. C. 3.v.34.
1 (M. C. Z. 40642) Near Witu, K. C. 31.v.34.
4 (M. C. Z. 40644–7) Ngatana, K. C. 12–15.vi.34.
1 (M. C. Z. 40648) Malindi, K. C. 30.vi.34.

Distribution. Also 4 from Sokoki Forest (H. J. A. T.)

Native names. *Namasanurugi* (Lugishu); *aerenet* (Kimasai); *ndasiangombe* (Kitaita); *juaka* or *paa* (Kipokomo).

Variation. Midbody scale-rows 17; ventrals 158–181; anal divided; subcaudals 81–106; labials 8, the 4th and 5th entering the orbit except on left side of M. C. Z. 40636 where there are 7, the 3rd and 4th entering the orbit; preocular 1; postoculars 2; temporals 2 + 2 on 24 sides, 2 + 3 on 20 sides; rostral as broad as deep in 13 snakes, broader than deep in 9, both conditions occurring in snakes from the same locality.

Coloration. The ventrals of the forest-edge specimens from the Central African material (Sipi, Butandiga, Kaimosi) exhibit well-defined, though dusky, lateral lines, in the coastal specimens these are represented by dashes or dots except a young Ngatana snake which is pure white below. One of the Mbololo snakes (M. C. Z. 40636) apparently represents Var. A. of Boulenger's "Catalogue of Snakes" (1896, p. 161) it is pure white below while the back is brown and striped like that of *P. subtaeniatus.*

Measurements. The largest ♂ (M. C. Z. 40622) measures 1095 mm. from snout to anus, the largest ♀ (M. C. Z. 40624) measures 1303 (935 + 368)mm.

Breeding. Only three snakes in the above series held developing ova.

Sipi, December 13, 1933.	♀	held	4	eggs	measuring	13 x 6 mm.
Bukori, January 18, 1934.	♀	"	10	"	"	27 x 10 mm.
" "	♀	"	7	"	"	38 x 19 mm.

These last were quite ready for laying.

Diet. Rodent fur in a Sipi snake; a striped mouse (*Lemniscomys s. massaicus*) in the Butandiga reptile; a tree rat (*Oenomys h. editus*) swallowed by the Kaimosi specimen, while a tree lizard (*Agama atricollis*) was recovered from one of the Bukori series.

Parasites. All these Bukori snakes were heavily infested with nematodes (*Physaloptera paradoxa*) as was the Kaimosi specimen. A few in one of the Mkonumbi snakes and one only in the Malindi reptile.

Psammophis subtaeniatus Peters

Psammophis sibilans var. *subtaeniatus* Peters, 1882, Reise nach Mossamb., **3**, p. 121: Boror and inland from Tete, Mozambique.

3 (M. C. Z. 40638–40) Lamu Island, K. C. 8.v.34.
1 (M. C. Z. 40841) Mkonumbi, K. C. 28.v.34.
1 (M. C. Z. 40643) Near Witu, K. C. 31.v.34.
1 (M. C. Z. 40649) Changamwe, K. C. 5.vii. 34.

Native name. *Mchezawanawaki* (Kiamu). The literal translation is "Plays with the women" the explanation being that when they are working in their gardens the women are scared and stampeded by the snake's appearance. The name was widely known and not the concoction of a native on the spur of the moment.

Variation. Midbody scale-rows 17; ventrals 160–167; anal divided; subcaudals 100–113; labials 8, the 4th and 5th entering the orbit; 4 lower labials in contact with the anterior chin shields; preocular 1 or 2 on right side of M. C. Z. 40641 only; postoculars 2; loreal 1; temporals 2 + 2 on right side, 2 + 3 on left side of every snake except M. C. Z. 40638 which had 2 + 2 on both sides.

Coloration. All have the pair of black lines along the belly sharply defined and clear.

Measurements. The largest ♂ (M. C. Z. 40641) measures 1182 (792 + 390) mm., the largest ♀ (M. C. Z. 40643) measures 835 mm. from snout to anus, the tail is truncated.

Diet. A young frog (*Rana edulis*) was recovered from the stomach of a very emaciated Mkonumbi snake.

Parasites. The other Mkonumbi snake had nematodes only in its stomach.

Psammophis punctulatus Duméril & Bibron

Psammophis punctulatus Duméril & Bibron, 1854, Erpét. Gén., **7**, p. 897: Arabia.

Psammophis punctulatus var. *trivirgatus* Peters, 1878, Monatsb. Akad. Wiss. Berlin, p. 206: Taita, Kenya Colony.

3 (M. C. Z. 40660–2) Mt. Mbololo, K. C. 20.iv.34.

Native name. *Ndasiangombe* (Kitaita).

Variation. Midbody scale-rows 17; ventrals 186–188; anal divided; subcaudals 118–152; labials 8, the 4th and 5th entering the orbit or 9, the 5th and 6th; preocular 1 in contact with or separated from the frontal; postoculars 2; loreal 1; temporals 1 + 2, 2 + 2 or 2 + 3.

Boulenger (1896, p. 159) gives the subcaudal range as 130–158, I might add that I have verified the new low count of 118 on an uninjured tail (M. C. Z. 40660).

Measurements. The ♂ (M. C. Z. 40662) measures 883 (560 + 323) mm., the larger ♀ (M. C. Z. 40660) measures 1530 (1030 + 500) mm.

Diet. A lizard (*Latastia l. revoili*) was recovered from the stomach of one of these Spotted Sand Snakes.

Psammophis biseriatus Peters

Psammophis biseriatus Peters, 1881, Sitzb. Ges. Naturf. Freunde Berlin, p. 88: Taita, Kenya Colony.

1 (M. C. Z. 40663) Tsavo, K. C. 4.iv.34.
3 (M. C. Z. 40664–6) Voi, K. C. 7–10.iv.34.
9 (M. C. Z. 40667–74) Mt. Mbololo, K. C. 17–30.iv.34.
1 (M. C. Z. 40675) Malindi, K. C. 30.vi.34.

Distribution. Mount Mbololo being in Taita (i.e. Utaita), the series from that locality are topotypes.

Native name. Mararinga (Kitaita).

Variation. Midbody scale-rows 15; ventrals 143–152; anal divided except M. C. Z. 40671 which has a single anal; subcaudals 92–125; labials 9, the 5th and 6th entering the orbit except on the right side of M. C. Z. 40671 which has the 4th, 5th and 6th entering; at first sight it would appear that Tanganyika snakes might be separated as having three labials entering the orbit, unfortunately this condition crops up elsewhere—in Somaliland for example; preoculars 1, or 2 in M. C. Z. 40667 and on right side of 40666; postoculars 2; temporals 1 + 2 (two sides), 1 + 3 (one side), 2 + 2 (eighteen sides), or 2 + 3 (seven sides); labials in contact with anterior chin-shield 5, or 4 on left side of M. C. Z. 40670 only.

Measurements. The largest ♂ (M. C. Z. 40668) measures 872 (541 + 331), the largest ♀ (M. C. Z. 40667) measures 1020 (660 + 360) mm.

Diet. A very large lizard (*Latastia l. revoili*) in the Tsavo snake, a skink (*Mabuya planifrons*) in one from Voi, chameleons (*C. d. roperi*) in two of the series from Mount Mbololo.

Thelotornis kirtlandii (Hallowell)

L(eptophis) Kirtlandii Hallowell, 1844, Proc. Acad. Nat. Sci. Philad., p. 62: Liberia.

4 (M. C. Z. 40676–9) Mt. Mbololo, K. C. 23–29.iv.34.

Distribution. Also 4 from Sokoki Forest (H. J. A. T.)

Native name. Mraringa (Kitaita).

Variation. Midbody scale-rows 19; ventrals 164–172; anal divided; subcaudals 148–166; labials 8, the 4th and 5th or 3rd, 4th and 5th (in M. C. Z. 40676 only) entering the orbit; lower labials in contact with the anterior chin shields 4–5; preoculars 1; postoculars 3; temporals 1 + 2.

Measurements. The largest ♂ (M. C. Z. 40676) measures 1422 (821 + 601) mm., the largest ♀ (M. C. Z. 40677) 1185 (713 + 472) mm.

Dispholidus typus (Smith)

Bucephalus typus A. Smith, 1829, Zoöl. Journ., **4**, p. 441: Old Latakoo, South Africa.

1 (M. C. Z. 40688) Butandiga, U. 8.i.34.
3 (M. C. Z. 40689–91) Bukori, K. C. 18.i.34.
8 (M. C. Z. 40692–9) Kaimosi, K. C. 12–28.ii.34.
5 (M. C. Z. 40700–4) Mt. Mbololo, K. C. 19–28.iv.34.

Distribution. A battered one also seen at Kibwezi, and others from Matalani (H. J. A. T.), Sokoki Forest (H. J. A. T.), and Fundi Isa (H. J. A. T.) in Nairobi Museum.

Native name. Ikumbu (Kitaita, but also applied to the Spotted Wood Snake (*Philothamnus s. semivariegatus.*)

Variation. Midbody scale-rows 19–21 (the latter on M. C. Z. 40702–4 only); ventrals 169–191; anal divided; subcaudals 87–119; labials 7, the 3rd and 4th entering the orbit, except on the right side of M. C. Z. 40695 where the 3rd, 4th and 5th enter; preoculars 1; postoculars 3; temporals 1 + 2, or 1 + 1 on right side M. C. Z. 40700, 1 + 3 on M. C. Z. 40702, 2 + 3 on M. C. Z. 40694.

Coloration. A small boy brought in an interesting pair of these Tree Snakes (M. C. Z. 40703–4). ♂. Top of head bright brick red like the red soil of the region, back nut brown but the keel of each scale partly white. Below, buffy white. ♀. Top of head as in the male but the back reddish brown, tail bright pink. Below, pink.

Green examples were taken at Bukori, Kaimosi and Mount Mbololo. Brownish ones at Butandiga, Bukori, Kaimosi and Mount Mbololo.

Measurements. The largest ♂ (M. C. Z. 40703) measures 1298 (962 + 336) mm., the largest ♀ (M. C. Z. 40704) measures 1391 (1073 + 318) mm.

Diet. Chameleons, viz. *C. b. höhnelii* at Butandiga; *C. g. gracilis* in all three Bukori snakes; *C. b. bitaeniatus*, four, in three Kaimosi snakes, *C. d. roperi* in two Mount Mbololo specimens, bird's feathers in a third.

Calamelaps unicolor (Reinhardt)

Calamaria unicolor Reinhardt, 1843, Dansk, Vidensk. Selsk. Skrift., **10**, p. 236, pl. i, figs. 1–3: Guinea, West Africa.

♀ (M. C. Z. 40705) Mt. Mbololo, K. C. 27.iv.34.
♀ (M. C. Z. 40706) Ngatana, K. C. 19.vi.34.
♂ (M. C. Z. 40707) Changamwe, K. C. 4.vii.34.

Native name. *Ngogoma* (Kipokomo).

Variation. Midbody scale-rows 17–19; ventrals 163–203; anal divided; subcaudals 16–27; labials 6, the 3rd and 4th entering the orbit except in M. C. Z. 40705 which has 5, the 2nd and 3rd entering the orbit; lower labials in contact with the anterior chin shields 4; preocular 0; postocular 1; temporal 1; loreal 0.

The rostral apparently develops with age as in Prosymna, it is not distinguishable from that of a Rhinocalamus of similar size so should be avoided as a key character.

Measurements. The ♂ measures 296 (265 + 31) mm., the larger ♀ (M. C. Z. 40705) measures 434 (410 + 24) mm.

Diet. Shortly after capture, the Changamwe snake disgorged a wolf snake (*Lycophidion c. acutirostre*) only 20 mm. shorter than itself. The similarity in the parallel development of these two blackish, burrowing snakes was striking. The head of the wolf snake was too digested for a labial count, but it was a ♂ with midbody scale-rows 17; ventrals 154; anal single; subcaudals 31, having 9 ventrals less, and 4 subcaudals more than its vanquisher.

Micrelaps bicoloratus Sternfeld

Micrelaps bicoloratus Sternfeld, 1908, Sitzber. Ges. Naturf. Freunde Berlin, p. 93: Kibwezi, Kenya Colony.
Rhinocalamus meleagris Sternfeld, 1908, Mitt. Zoöl. Mus. Berlin, 4, p. 244, fig. 4: no locality given, later (1910) stated as Lamu Island.

♀ (M. C. Z. 40708) Tsavo Station, K. C. 5.iv.34.

Distribution. I failed to secure this rare little burrowing snake at Kibwezi from which Tsavo is distant some fifty miles.

Synonymy. I believe that Sternfeld was led to describe *Rhinocalamus meleagris* by a too slavish adherence to the key in the Catalogue of Snakes, vol. 3 (1896, p. 31). In his *bicoloratus* the postocular is barely in contact with a temporal, in *meleagris* it is well separated. Some years ago, I (1923, p. 889) referred a snake from Gonya, near Kilimanjaro to *meleagris*. In 1925 the Museum of Comparative Zoölogy received another Tanganyika specimen identified as *meleagris* by Franz Werner. The same year Angel (1925, p. 36) recorded *meleagris* from Samburu, near Mombasa. The Tsavo snake is undoubtedly conspecific with all

these yet geographically they come from round the type locality of *bicoloratus*.

If we arrange the available scale counts for these snakes, we find that those from the farthest north agree closely with those from the furthest south.

Type of *meleagris*	Lamu Island	has	251	ventrals	and 22	subcaudals.
Type of *bicoloratus*	Kibwezi	"	226	"	" 16	"
M. C. Z. 40708	Tsavo	"	235	"	" 23	"
Paris Museum	Samburu	"	202	"	" 28	"
Nairobi Museum	Gonya	"	?	"	" 28	"
M. C. Z. 20948 ex. Tanganyika Terr.		"	256	"	" 23	"

Sternfeld's figures show the frontal of *bicoloratus* to be much wider than the supraocular while it is equal to them in *meleagris*. In this character our two snakes agree with *bicoloratus* but they agree with *meleagris* in having the postocular separated from the temporal.

Variation. Midbody scale-rows 15; ventrals 235; anal divided; subcaudals 23; labials 7, the 3rd and 4th entering the orbit; preocular 0; postocular 1; loreal 0; temporals 1 + 1.

Measurements. ♀ measures 273 (256 + 17) mm.

Aparallactus turneri Loveridge

Aparallactus turneri Loveridge, 1935, Bull. Mus. Comp. Zoöl., **79**, p. 9: Sokoki Forest, near Malindi, Kenya Colony.

1 (M. C. Z. 40120–1) Peccatoni, K. C. 24.v.34.
2 (M. C. Z. 40121–2) Mkonumbi, K. C. 28.v.34.
2 (M. C. Z. 40123–4) Near Witu, K. C. 31.v.34.

Variation. Midbody scale-rows 15; ventrals 120–139; anal single; subcaudals 31–42; labials 6, the 2nd and the 3rd entering the orbit; preocular 1; postocular 2, or 1 in the type only; symphisial not in contact with the chin shields or almost so in M. C. Z. 40124.

Measurements. The largest ♂ (M. C. Z. 40120) measures 202 (167 + 35) mm.

Aparallactus capensis Smith

Aparallactus capensis A. Smith, 1849, Illus. Zoöl. S. Africa, Rept., App. p. 16: Kaffirland eastward of Cape Colony.

2 (M. C. Z. 40709–10) Mt. Mbololo, K. C. 17.iv.34.

Distribution. These constitute the second record of *capensis* for Kenya Colony to the best of my belief, they involve *punctatolineatus* also for reasons explained below.

Native name. *Mowa* (Kitaita, but generic).

Variation. *A. punctatolineatus* Boulenger only differs from *capensis* in having 6 or 7 upper labials with the 2nd and 3rd entering the orbit while *capensis* has 7 upper labials, the 3rd and 4th entering the orbit, apparently there is no second distinguishing character. Both the Mbololo snakes were taken by me on the same day yet M. C. Z. 40709 agrees with *capensis*, M. C. Z. 40710 with *punctatolineatus*, the latter having only 6 labials of which the 2nd and 3rd enter the orbit.

A. punctatolineatus is known from two specimens from Angola and Nyasaland and is therefore within the range of *capensis*. I strongly suspect that it only occurs as an aberration of *capensis*. I imagine that Tornier's (1897, p. 79) records of *nigriceps*, copied by Sternfeld (1910a, p. 36), from Tanga and Marangu, Kilimanjaro are similar aberrant *capensis* for the latter author (1910a, p. 36) records *capensis* from Tanga and Kilimanjaro on the same page.

It might be as well to add that in these Mbololo snakes the symphisial *is* in contact with the anterior chin-shields and these snakes have only a single postocular which is well separated from the temporals. It is clear therefore that they cannot be referred to either *werneri* of the Usambara or *jacksonii* of Mount Kilimanjaro which was more to be expected.

Midbody scale-rows 15; ventrals 140–163; anal entire; subcaudals 37 and mutilated; preocular 1.

Measurements. The larger ♀ (M. C. Z. 40709) measures 268 + (230 + 38 +) mm., its tail-tip being missing.

Diet. The stomach of the smaller contained two centipedes of a species of which a tubeful were collected.

Habitat. One was taken beneath a rotting log in the forestry nursery at 4,000 feet, the other beneath a stone on the eastern slope at 4,500 feet approximately.

Aparallactus concolor (Fischer)

Uriechis concolor Fischer, 1884, Jahr. Hamburg Wiss. Anst., **1**, p. 4, pl. i, fig. 1: Arusha, Tanganyika Territory.

1 (M. C. Z. 40711) Voi, K. C. 17.iv.34.
3 (M. C. Z. 40712–4) Mt. Mbololo, K. C. 23–30.iv.34.

Native name. *Mowa* (Kitaita, but generic).

Corrigenda. Angel (1925, p. 36) has already recorded this species

from Bura near Mbololo but under the erroneous identification of *Elapops modestus*. I have examined the snake in question.

Variation. Midbody scale-rows 15; ventrals 143–158; anal entire; subcaudals 58–62; labials 7, the 3rd and 4th entering the orbit; infralabials in contact with the anterior chin shields 4; preocular 1; postocular 1; loreal 0; temporals 1 + 2.

Measurements. The larger ♂ (M. C. Z. 40714) measures 342 (280 + 62) mm., the larger ♀ (M. C. Z. 40711) measures 520 (420 + 100) mm.

Aparallactus uluguruensis Barbour & Loveridge

Aparallactus uluguruensis Barbour & Loveridge, 1928, Mem. Mus. Comp. Zoöl., **50**, p. 132: Nyange, Uluguru Mountains, Tanganyika Territory.
Aparallactus concolor boulengeri Scortecci, 1931, Atti. Soc. Ital. Milano, **70**, p. 212: Villa Duca Abruzzi and Inland from Mogadish, Italian Somaliland.

♀ (M. C. Z. 40715) Ngatana, K. C. 17.vi.34.

Distribution. This is the first record of the occurrence of this species in Kenya Colony, but not wholly unexpected as other rain-forest forms occur at Ngatana. Its occurrence in Italian Somaliland, however, leads one to suppose that it cannot be regarded as a rain-forest form; its distribution prevents its being treated as a race of *concolor*.

Native name. Penge (Kipokomo).

Variation. Midbody scale-rows 15; ventrals 155; anal single; subcaudals 47; labials 7, the 3rd and 4th entering the orbit; preocular 1; postocular 1; loreal 0; temporals 1 + 2.

This specimen agrees with the ten types in the symphisial being broadly in contact with the anterior chin shields and the nasal in contact with the preocular so that the second supralabial is separated from the prefrontal. These serve to separate it from *concolor*. The character of how much rostral, as seen from above, stands in relation to its distance from the frontal, does not seem to be of specific significance. While there are only three lower labials in contact with the anterior chin shield on the left (as in the ten types of *uluguruensis*), there are barely four on the right as in *concolor*.

Measurements. ♀ measures 370 (300 + 70) mm.

Breeding. On June 17, 1934, there were 2 eggs measuring 12 x 5 mm. in her oviduct.

ELAPINAE

Elapsoidea günther ii Bocage

Elapsoidea Güntherii Bocage, 1866, Jorn. Sci. Lisboa, **1**, p. 70, pl. i, figs. 3–3b: Cabinda, Portuguese Congo and Bissao, Portuguese Guinea.

1 (M. C. Z. 40717) Nairobi, K. C. 30.x.33.
2 (M. C. Z. 40718–9) Sipi, U. 12.xii.33.
6 (M. C. Z. 40720–4) Kaimosi, K. C. 13–28.ii.34.

Native name. Mugoya (Lugishu).

Variation. Midbody scale-rows 13; ventrals 156–167; anal entire; subcaudals 18–26; labials 7, the 3rd and 4th entering the orbit; preocular 1; postoculars 2; temporals 1 + 3; internasals shorter than the prefrontals; symphisial separated from the chin shields.

Coloration. The young Nairobi snake is of the red-and-white banded type (*güntherii*), the rest are uniformly black or black with pairs of light transverse lines (*nigra*). For a discussion of the relationship of these two forms see Barbour & Loveridge (1928, p. 134) based on a series of forty-seven snakes from the Uluguru and Usambara Mountains.

Measurements. The largest ♂ (M. C. Z. 40722) measures 623 (575 + 48) mm., the largest ♀ (M. C. Z. 40721) measures 630 (581 + 49) mm.

Naja melanoleuca Hallowell

Naia haie var. *melanoleuca* Hallowell, 1857, Proc. Acad. Nat. Sci. Philad., p. 61: Gaboon, West Africa.

3 (M. C. Z. 40725–7) Sipi, U. 19–23.xii.33.
1 (M. C. Z. 40728) Butandiga, U. 12.i.34.
16 (M. C. Z. 40730–41) Kaimosi, K. C. 14–28.ii.34.

Native names. Swila (Luganda); *wahobi* (Lugishu). The first name is also commonly applied to the Egyptian Cobra (*N. haje*) in western Tanganyika Territory.

Local European name. At Kaimosi I found the Black-and-white Cobra was erroneously called a "Black Mamba" by the American and European residents.

Variation. Midbody scale-rows 19; ventrals 206–220; anal entire; subcaudals 57–68; labials 7, the 3rd and 4th entering the orbit, the 6th constantly largest and in contact with the postoculars; rostral invariable broader than deep; preoculars 1, or 2 in M. C. Z. 40727 only; postoculars 3, or 2 on eight sides only; temporals 1 + 1 on two sides, 1 + 2 on twelve, 1 + 3 on twenty-five, 2 + 3 on one.

Measurements. The largest ♂ (M. C. Z. 40730) measures 2112 (1790 + 322) mm., the largest ♀ (M. C. Z. 40731) 1700 (1440 + 260) mm.

Weight. The six foot, ten and three-quarter inch male weighed four pounds on a spring balance when freshly killed, its stomach being empty.

Breeding. On February 26, 1934, a large Kaimosi ♀ (M. C. Z. 40729) held 15 eggs, measuring 60 x 30 mm. ready for deposition.

Diet. Rodent fur in a Sipi snake while the following mammals were found in three of the Kaimosi series, *Dasymys h. helukus, Lemniscomys s. massaicus, Arvicanthis a. nubilans.*

Parasites. Ticks (*Aponomma laeve*) were present on several cobras in the Kaimosi series but no internal parasites except a nematode (*Physaloptera sp.*), and three small nematodes (*Kalicephalus sp.*) recovered from a Sipi male.

Enemies. A shrivelled old hag of an Mgishu killed two big cobras in her garden without damaging either, the larger was about five and a half feet in length.

Naja nigricollis nigricollis Reinhardt

Naja nigricollis Reinhardt, 1843, Dansk. Vidensk. Selsk. Skrift, **10**, p. 269, pl. iii. figs. 5 and 7: Guinea, West Africa.

♀ (M. C. Z. 40742) Kibwezi, K. C. 29.iii.34.

Variation. Midbody scale-rows 27; the highest on record except Sternfeld's for 27, without locality, from Hoffman[1]; ventrals 220; anal entire; subcaudals 59; labials 6, the 3rd entering the orbit; lower labials in contact with the anterior chin shields 4; preocular 1; postoculars 3; temporals 2 + 5 and 2 + 4.

Coloration. Bright reddish pink above with an encircling collar of black which covers seven ventrals on the "throat," a black blotch below the orbit.

This is the rare red variety whose first mention in literature would appear to be that of Patterson (1907, p. 164) in "The Maneaters of Tsavo." where he writes: "a great red snake, about seven feet long, gazing at me from the side of my camp-bed." The only other examples that I have seen are two from the base of Mount Longido,

[1] As Hoffman lived at Kibwezi the snake doubtless came from there. Sternfeld refers it to "var. *pallida*," probably the reddish pink hue had faded before he saw it.

Tanganyika Territory which is in the same patch of red-soil, thorn-bush country as Tsavo and Kibwezi.

Measurements. ♀ measures 1372 (1168 + 204) mm.

Dendraspis jamesoni kaimosae Loveridge

(Plate 4, fig. 2)

Dendraspis jamesoni kaimosae Loveridge, 1936, Proc. Biol. Soc. Washington, **49**, p. 64: Kaimosi, Kakamega district, Kenya Colony.

7 (M. C. Z. 40743–8) Kaimosi, K. C. 10–22.ii.34.

Remarks. The above series consists of the type and paratypes of the eastern form characterized by a uniformly black tail and fewer subcaudals, viz. 94–104 instead of 103–122.

Diet. A tree rat (*Oenomys h. editus*) in one, a swamp rat (*Otomys t. elgonis*) in another.

Habitat, etc. The seven foot snake which had swallowed a tree rat was lying coiled on the horizontal, spreading branch of a tree close to camp. The head was protected by the coils but a charge of dust shot from the .410 so disabled it that the mamba was unable to make off and a charge of No. 8 from the other barrel brought it down.

A native brought in another about the same size. He had been cycling along the road towards our camp when the snake attempted to dash across the track. The boy jammed on his brakes, but the snake was already through his front wheel and, entangled in the spokes, wedged into the front fork. The lad sprang from the machine and ran down the road. On looking back he saw the snake still caught in the forks at which it was striking blindly, cutting a long pole the native returned and belaboured the snake from a safe distance but without damaging it lest its value be depreciated. When stunned, he placed a noose round its neck and brought it alive to camp where it presently recovered (vide plate 4, fig. 2).

Dendraspis angusticeps (Smith)

Naia angusticeps A. Smith, 1849, Illus. Zoöl. S. Africa, **3**, pl. lxx: Natal and the country eastwards towards Delagoa Bay.

Dendraspis sjöstedti Lönnberg, 1907, in Sjöstedt, "Wiss. Ergeb. Schwed. Zoöl. Exped. Kilimandjaro, Meru umgeb. Massaisteppen." No. 4, p. 17, pl. i, f. 2: Kibonoto, Kilimanjaro, Tanganyika Territory.

♂ (M. C. Z. 40749) Kibwezi, K. C. 24.iii.34.
skin (M. C. Z. 40750) Tsavo, K. C. iii.34.
♀ (M. C. Z. 40751) Mt. Mbololo, K. C. 16.iv.34.
♂ ♀ ♀ (M. C. Z. 40752–3) Kitau, Manda Id., K. C. 15–19.v.34.
♂ (M. C. Z. 40754) Near Witu, K. C. 31.v.34.
young (M. C. Z. 40755) Malindi, K. C. 29.vi.34.

Distribution. Also one from Sokoki Forest (H. J. A. T.).

Native names. Ilumangiu (Kitaita); *fiha* (Kiamu).

Synonymy. D. sjöstedti was based on one of seven mambas taken at Kibonoto, the others being referred to *angusticeps*. It is, as its author thought might be the case, only an aberrant individual whose irregular scalation is due to a fusing of head shields in these very variable reptiles.

Variation. Midbody scale-rows 19–25; ventrals 209–250; anal divided; subcaudals 104–114; labials 7–9, the 4th entering the orbit; preoculars 3; postoculars 3–4, the lowest might be termed a subocular; temporals 2 + 3, 2 + 4 or rarely 2 + 5; temporals along the outer border of a parietal 2–4, being separated from the hindmost on the opposite side by from 3–7 scales.

Measurements. The largest ♀ (M. C. Z. 40752) measures 9 feet, i.e. 2630 (2110 + 520) mm., the tip of the tail being missing.

Diet. One Kitau mamba held a bat (*Lavia f. rex*) and two young thrushes (*Turdus tephronotus*) so freshly swallowed that all three were preserved. See below.

Parasites. Ticks (*Aponomma laeve*) were preserved from Kitau snakes.

Field Notes. As a native youngster and I were creeping through the scrub woodland, our attention occupied with searching the trees for hyrax, a vivid green mamba was suddenly seen by my small guide. He started back, colliding into me; the snake, I fancy, having been lying across the trail we were pursuing. When I first saw it the beautiful reptile was within six feet of us and rapidly ascending a bush to a liana, thence to a tall euphorbia. I let it attain a height of thirty feet before shooting it. It fell at my feet and was dispatched with a stick. Length 5′ 8½″. (Kibwezi, March 24, 1934).

On arrival at Tsavo, I found the eight-foot skin of a mamba hanging in the cellar of the empty house which I occupied, I learned that it was from a snake which a fortnight before had been shot about fifty feet from the empty building by a prospector who had stayed in the house.

One day, I was standing on a large mass of smooth, but slightly

sloping, rock on a boulder-strewn hill southeast of the station. Below, and to the left of me, was a gunbearer searching for a hyrax which I had just shot. Above, and behind me, a second native was descending after going to retrieve a lizard which I had shot. Apparently, in descending, he disturbed a mamba, possibly six feet in length, certainly not an inch less than five feet. It was so quick in its rush that he never saw it. I felt something bump and brush against my shoe, as I half-turned the snake was already in mid-air having shot off the rock with the impetus of its descent. It landed twenty feet below on a mass of scrub and thorn, never paused, slid straight over another huge slab in full view, then dived into a tangle of vegetation beyond this rock and was seen no more. The boy on the rocks to the left below me, exclaimed: "Did you see that big snake go right between your legs?" As a matter of fact it was not actually between, what happened was that it had side-slipped with the velocity with which it arrived on the rock, then cannoned against my shoe. I was thankful that my back was towards it for had I been facing the other way I should doubtless have gone to swell the ranks of those who thought they had been attacked by a mamba. Though I had a twelve-bore shotgun in my hand there was not time to use it and had there been I should have hesitated to do so with the descending native just twenty feet behind the snake. (Tsavo, April 4, 1934).

An Mtaita brought in a fine specimen measuring eight and a quarter feet, he said that he shot it with an arrow as it was about to enter the door of his hut. Today I was summoned to catch an exceptionally large one that was engaged in swallowing a big species of rat (apparently a cane rat (*Thrynomys* sp.) by their description); the mamba was on a narrow path through dense, impenetrable scrub. They said that this particular snake was well known as it frequented a tree overhanging a waterhole and scared the women coming for water. We passed this waterhole which was about fifty yards from where the snake was supposed to be swallowing the rat. On our arrival we found that it had departed, leaving a track as large as that of a small python; we lost it in the scrub. (Mount Mbololo, April 16, 1934).

The afternoon of our arrival on Manda Island my attention was attracted by two thrushes fluttering about an acacia. It turned out that they were annoyed by a five and a half foot mamba which had swallowed their nestlings. A full account of the incident will be found in the report on the birds collected, (see page 177 of this vol.) under *Turdus tephronotus*. (Kitau, May 15, 1934).

Our part of the island was largely covered by acacia trees whose low, wide-spreading boughs necessitated constant stooping when one followed the few native paths through the dense scrub. These same spreading boughs apparently provided ideal situations on which mambas could sun themselves. Today we were returning to camp along a narrow path through acacia forest and scrub. I, leading by about a hundred feet, stooped and passed beneath a spreading bough, as I had already done a score of times during the morning's tramp.

Next came a native carrying a dikdik in each hand. He also stooped and passed on. The gunbearer followed, a collecting gun in his right hand, a rifle slung across his back and projecting above his left shoulder. A tall fellow, he did not stoop sufficiently, and the muzzle of the rifle became entangled in the branch. Without looking round, he impatiently jerked his left shoulder; failing to free himself, he turned to see how best he could be extricated and found himself looking into the face of a mamba whose "neck" was resting against the rifle barrel and must therefore have been within six inches of his face. With a wild cry, the man sprang forward, freeing the rifle by the impetus of his rush. I came hurrying back, to find the snake already three trees away and travelling fast over foliage at a height of twenty-five feet from the ground. I shot it, and, on recovering the reptile, found it to be a nine-foot female, exclusive of the tip of the tail which was missing — probably lost in her youth. She was in well-nourished condition with quantities of fat though the stomach was clean and empty. (Kitau, May 17, 1934).

As I was running through fairly open scrub in search of a bush-fowl that I had shot, I disturbed a mamba, six feet in length. Apparently it was on the ground but when first seen it was four feet from my face ascending a bush at a great pace, from thence to an acacia without pausing until it attained a height of twenty feet. There I shot it; in its stomach were nestling birds. (Kitau, May 19, 1934).

The point in recounting these incidents is to show that in East Africa, as distinct from further South, mambas do not as a normal thing appear to be aggressive. Though they were evidently very abundant on Manda Island the natives said that they only remembered one of their number being bitten by this species. He inadvertently trod upon it, was bitten, and died; the incident occurred several years before.

VIPERIDAE

Causus resimus (Peters)

Heterophis resimus Peters, 1862, Monatsb. Akad. Wiss. Berlin, p. 277, pl. –, fig. 4: Gebel Ghule, Sennar, Sudan.

Causus Jacksonii Günther, 1888, Ann. Mag. Nat. Hist. (6), **1**, p. 331: Lake Tanganyika and Lamu, Kenya Colony.

2 (M. C. Z. 40757–8) Kaimosi, K. C. 25.ii.34.
2 (M. C. Z. 40759–60) Peccatoni, K. C. 24.v.34.
10 (M. C. Z. 40761–70) Ngatana, K. C. 11–20.vi.34.

Native names. *Kiukisi* (Kiamu); *lundugalla* (Kipokomo).

Variation. Midbody scale-rows 19–21; ventrals 137–145; anal entire; subcaudals 16–23; labials 6; subocular 1 or fused with a postocular, the fusion reaches a climax in several snakes where the eye is surrounded by only three scales and the supraocular; preoculars 1–3, normally 2; postoculars 1–3, normally 2; temporals 2 + 3, rarely 2 + 4.

Measurements. The largest ♂ (M. C. Z. 40762) measures 572 (517 + 55) mm., the largest ♀ (M. C. Z. 40764) measures 552 (512 + 40) mm.

Breeding. At Peccatoni on May 24, 1934, a ♀ held 9 eggs measuring 12 x 5 mm., at Ngatana on June 11, 1934, another had 4 eggs measuring 19 x 9 mm., in her oviducts.

Two snakes, taken at Kaimosi on February 25, 1934 and at Ngatana about June 12, 1934, are so small as to give some indication of the breeding season. They measured 176 and 190 mm. respectively.

Diet. At Peccatoni, I had just remarked that it was curious there were no snakes seeking the numerous frogs assembled in swamped grasslands near the lake, when we disturbed a Green Night Adder moving sluggishly along beneath a young doom palm on a little island in the flooded area. Shortly after capture it disgorged two young *Rana m. mascareniensis* while in its stomach was a *Phrynomerus bifasciatus* so recently taken as to be worth preservation, and a second which had probably been swallowed twenty-four hours before, as the head and anterior portion of the body were digested away. In an Ngatana snake were the remains of a toad (*Bufo steindachneri*).

Parasites. At Ngatana one male had a cestode (*Ophiotaenia ? punicea*), and had a Linguatulid emerging from its nostril while others (*Porocephalus subulifer* and *Raillietiella boulengeri*) were removed from its stomach; a second specimen, which like the first was killed in a cyanide jar, had one of these curious creatures emerging from its anus.

Causus defilippii (Jan)

H(eterodon) De Filippii Jan, 1862, Arch. Zoöl. Anat. Fisio., **2**, p. 225: Africa.

♂ ♂ (M. C. Z. 40771–2) Sokoki Forest, K. C. vi.32.

Collected and presented by Mr. H. J. Allen Turner.

Variation. Midbody scale-rows 17; ventrals 112–115; anal entire; subcaudals 16–17 pairs; labials 6; subocular 1; preoculars 2; postoculars 2; temporals 2 + 3 and 2 + 4.

Measurements. The larger ♂ (M. C. Z. 40771) measures 376 (343 + 33) mm.

Parasites. Ticks (*Aponomma ochraceum*) of a rare species were found upon it.

Causus lichtensteinii (Jan)

H (eterodon) Lichtensteinii Jan, 1859, Rev. & Mag. Zoöl., p. 511: Gold Coast.

♂ (M. C. Z. 40756) Kaimosi, K. C. 28.ii.34.

Variation. Midbody scale-rows 15; ventrals 144; anal entire; subcaudals 22; labials 7; subocular 1; preoculars 3; postoculars 2; temporals 2 + 3.

Measurements. ♂ measures 527 (480 + 47) mm.

Bitis arietans (Merrem)

(Plate 5, fig. 1)

Vipera arietans Merrem, 1820, Vers. Syst. Amphib., p. 152: Cape of Good Hope.

♀ (M. C. Z. 40773) Aturai, Karamoja, U. 11.xi.33.
♂ (M. C. Z. 40774) Sipi, U. 22.xii.33.
2 (M. C. Z. 40775) Bukori, K. C. 18.i.34.
♀ (M. C. Z. 40776) Kirui, K. C. 21.i.34.
♀ (M. C. Z. 40777) Elgonyi, K. C. 31.i.34.
2 (M. C. Z. 40778) Kaimosi, K. C. 10.ii.34.
♀ (M. C. Z. 40779) Kibwezi, K. C. 23.iii.34.
♂ (M. C. Z. 40780) Mkonumbi, K. C. 28.v.34.

Native names. Akipom (Karamojong); *chikorviri* (Lugishu).

Variation. Midbody scale-rows 27–35; ventrals 132–143; anal entire; subcaudals 16–33; labials 11–15.

Measurements. The largest ♂ (M. C. Z. 40780) measures 1400 (1280 + 120) mm., i.e. 55 inches long, being the biggest ♂ I have seen. Though rather emaciated and its stomach empty, it weighed 6 lbs. on a spring balance.

Breeding. The Aturai ♀ had ova just developing, the Elgonyi snake fifteen or more embryos, the exact number undeterminable from the pounding the snake had received from the native who brought it in. The Kibwezi Puff Adder is so young (213 mm.) as to have been but recently born.

Diet. Rodent fur in the Sipi snake, a House Rat (*Rattus r. kijabius*) in the Kaimosi reptile.

Distribution. Said not to occur on Lamu Island, but the natives on Manda Island say that it is common there and that many cattle die from its bite. The probability is that they die from mamba bites. I saw no Puff Adders during my week on the island though I searched specially for them one afternoon.

Bitis nasicornis (Shaw)

(Plate 5, fig. 2)

Coluber Nasicornis Shaw, 1802, Nat. Miscell., **3**, pl. xciv: Interior of Africa (from the master of a Guinea vessel).

18 (M. C. Z. 40781–94) Kaimosi, K. C. 8–10.ii.34.

Native name. Liheri (Luragoli).

Variation. Midbody scale-rows 33–39; ventrals 119–129; anal single; subcaudals 16–30; labials 15–19.

Measurements. The largest ♂ (M. C. Z. 40783) measures 760 (705 + 55) mm., the largest ♀ (M. C. Z. 40781) measures 1015 (945 + 70) mm.

Sexual dimorphism. Subcaudals in males are 25–30, in females 16–19. Males up to a length of 476 mm. have the belly beautifully marbled and mottled as in all females, adult males, however, have the belly uniformly dirty white in sharp distinction to those of the females. On close examination markings can be vaguely discerned beneath the scales though this has nothing to do with sloughing.

Breeding. Thirty-eight large embryos were present in each of two big females brought in on the 8th of February, 1934.

Diet. Rodent fur was present in most stomachs, the only identifiable mammals were a shrew (*Crocidura n. nyansae*) and a mouse (*Lophuromys a. aquilus*). A toad (*Bufo r. regularis*) in a young viper.

Parasites. One three-quarter grown snake held twenty-five large linguatulids (*Armillifer grandis*) in its intestines, stomach and in the viscera just behind the head. The stomach of the same animal held many small nematodes.

Enemies. Nose-horned vipers were recovered from the stomachs of a civet (*Civettictis c. schwarzi*) and mongoose (*Iehneumia a. ibeana*).

This big viper is so abundant at Kaimosi that eighteen were brought in by natives in three days, after which I refused to purchase more so that no deduction can be made as to its abundance from the number brought back. I feel confident that I could have obtained a hundred during the month we were at Kaimosi.

Atheris squamigera (Hallowell)

Echis squamigera Hallowell, 1854, Proc. Acad. Nat. Sci. Philad., p. 193: Near the Gaboon River, Guinea, French West Africa.

♀ (M. C. Z. 40795) Sipi, U. 18.xii.33.
49 (M. C. Z. 40796–841) Kaimosi, K. C. 10–28.ii.34.

Native name. Kisigosog (Lugishu).

Variation. Midbody scale-rows 19–23, average 20; ventrals 148–161, average 153; anal entire; subcaudals 40–59, average 50; labials 8–12 though only four sides have 11 and one 12, average 9.

Measurements. The largest ♂ (M. C. Z 40841) measures 595 (492 + 103) mm., the largest ♀ (M. C. Z. 40795) measures 701 (590 + 111) mm.

Sex. Apart from the fact that adult females attain a larger size than adult males while the latter have tails proportionately longer on the average, the sexes cannot be distinguished either by their ventral or their subcaudal scale counts.

Breeding. The ♀ from Sipi, killed December 18, 1933, was bloated with very small embryos but so damaged as to be uncountable. None of the Kaimosi series was gravid.

Diet. A tree mouse (*Dendromus i. insignis*), a mouse (*Mastomys c. tinetus*) in another while two held pigmy mice (*Leggada g. grata*). Unidentifiable rodent fur and a tree frog (*Hyperolius rossii*) completed the list for forty-four stomachs were empty!

Atractaspis bibronii Smith

Atractaspis bibronii A. Smith, 1849, Illus. Zoöl. S. Africa, Rept. pl. lxxi: Eastern districts of Cape Colony, South Africa.

Atractaspis rostrata Günther, 1868, Ann. Mag. Nat. Hist. (4), **1**, p. 429, pl. xix, fig. 1: Zanzabar.

3 (M. C. Z. 40842–4) Ngatana, K. C. 13–19.vi.34.
2 ♂ (M. C. Z. 40845–6) Changamwe, K. C. 4.vii.34.

Native name. *Ume* (Kipokomo).

Variation. Midbody scale-rows 23; ventrals 245–258; anal entire; subcaudals 21–25; labials 5, the 3rd and 4th entering the orbit; lower labials in contact with an anterior chin shield 3; preocular 1; postocular 1; loreal 0; temporals 1 + 2.

Measurements. The larger ♂ (M. C. Z. 40845) measures 448 (422 + 26) mm., the largest ♀ (M. C. Z . 40842) measures 549 (519 + 30) mm.

Diet. A skink (*Riopa sundevallii*) was in the stomach of one of the burrowing vipers from Changamwe.

Habitat. I took the Changamwe snakes beneath a pile of rotting palm fronds and the palm thatch of a collapsed hut close to the station.

Atractaspis microlepidota Günther

Atractaspis microlepidota Günther, 1866, Ann. Mag. Nat. Hist, (3), 18, p. 29, pl. vii, fig. 3: Type locality unknown. "Probably West Africa." *errore.*

3 ♀ (M. C. Z. 40847–9) Voi, K. C. 10.iv.34.

Variation. Midbody scale-rows 32; ventrals 239–252; anal entire; subcaudals 27–34 (one had the first 23 subcaudals single, then 8 paired followed by the last 3 single); labials 6–7, the 4th entering the orbit; lower labials in contact with an anterior chin shield 3; preocular 1; postocular 1; loreal 0; temporals 2 + 4 and 3 + 4.

Measurements. The largest ♀ (M. C. Z. 40847) measures 770 (705 + 65) mm.

Habitat. Both the adult females were taken together under the rotting grass roof of a collapsed native hut about a mile southeast of the station. In the same spot was a large female boa (*Eryx c. loveridgii*) while among the debris of another hut fifty feet away was another boa and a young House Snake (*Boaedon lineatus*). Though taken at the end of a long dry season and the stomachs of all these snakes were empty, they possessed considerable deposits of fat.

GEKKONIDAE

Cnemaspis africanus africanus (Werner)

Gymnodactylus africanus Werner, 1895, Verh. zoöl.-bot. Ges. Wien, **45**, p. 190, pl. v, f. 5: Usambara Mountains, Tanganyika Territory.

2 ♂ 1 ♀ (M. C. Z. 40877–9) Mt. Mbololo, K. C. 22.iv.34.

Variation. Upper labials 6–8; lower labials 6–8; preanal pores 10, one male has an additional, supernumerary pore anterior to the usual row; back and base of tail with 10–14 irregular rows of enlarged tubercles.

Measurements. The larger ♂ has the same head and body length as the ♀, but his tail is damaged; ♀ measures 91 (50 + 41) mm.

Breeding. This female was gravid, the ova being about half the diameter of an egg when laid.

Diet. A cockroach and remains of small beetles.

Habitat. Found in the remnent of rain forest capping the mountain at 4,800 feet. I observed one of these geckos slip beneath loose bark on the trunk of a huge tree at a height of six feet from the ground; by stripping the bark we secured this specimen and two others. Extensive search in the forest failed to produce any more.

Cnemaspis africanus elgonensis Loveridge

(Plate 6, fig. 1)

Cnemaspis africanus elgonensis Loveridge, 1936 (1935), Proc. Zoöl. Soc. London, p 820: Above Sipi at 6,500 feet, Mount Elgon, Uganda.

♂ (M. C. Z. 40870) Nyenye, Mt. Elgon, U. 8.xii.33.
2 ♂ 2 ♀ & eggs (M. C. Z. 40871–5) Sipi, Mt. Elgon, U. 12–14.xii.33.
♂ (M. C. Z. 40876) Kaimosi, Kakamega, K. C. 24.ii.34.

Distribution. Eggs of this race were also found on Mount Debasien at 5,000 feet; a gecko was seen at Buluganya, 6,024 feet, on the western slopes of Mount Elgon.

These Elgon geckos represent the type series of a central African form as distinct from the typical form inhabiting the montane forests of eastern Africa.

Native names. Kibaragwesi (Kisabei and Lugishu, but not specific). Called *lisiamogoma* by the Maragoli of Kaimosi who believe it to be the young of *Agama atricollis*, to which lizard this name more properly belongs.

Variation. Upper labials 5–7, average 6.1; lower labials 5–7, average 6; preanal pores 6–8; back and base (only) of tail with 10–14 irregular rows of enlarged tubercles.

Coloration. Varying with environment, pale olive on the olive bark of a wild fig tree at Nyenye.

Adult ♀ type at Sipi. Above, gray- or brown-olive, lighter on crown and with a pale, interrupted, vertebral line. Below, soiled white flecked with brown, regenerated portion of tail plumbeous.

Newly-hatched young are faintly yellowish from neck to anus, tail pink below. Half-grown young are bright mustard yellow from chin to anus and this may even extend on to the base of the tail, remainder of tail being gray.

Measurements. Largest ♂ (M. C. Z. 40872) measures 109 (52 + 57) mm.; largest ♀ (M. C. Z . 40873) measures 112 (56 + 56) mm., but is shorter by 5 mm. in length from snout to anus than another with a regenerated tail. Newly-hatched young measure 40 (19 + 21) mm.

Breeding. On November 22, I found two fresh eggs of this species beneath a log on cleared land on Mount Debasien at 4,500 feet. No geckos were seen, however, and unfortunately these eggs broke in the laboratory while being measured.

On December 12, a gravid ♀ with fully developed eggs was taken at Sipi; on the 14th many eggs, measuring from 10 x 10 to 11 x 9 mm., mostly holding embryos, were found; some of the young hatched out during the following week.

Diet. Three crickets in Sipi geckos examined.

Enemies. One ♂ (M. C. Z . 40871) was recovered from the stomach of a green snake (*Chlorophis hoplogaster*).

Habitat. The Kaimosi gecko was found in a bucket into which it had fallen and from which it could not escape. Another was seen on the door of a garage at the mission, showing a certain amount of adaptability in this sylvicoline species.

Cnemaspis quattuorseriatus (Sternfeld)

Gonatodes quattuorseriatus Sternfeld, 1912, Wiss. Ergebn. Deutsch-Zentral-Afrika-Exped. 1907–08, **4**, p. 202, pl. vi, f. 1: Kissenje; Lake Kivu; Uvira, etc., Belgian Ruanda.

5 ♂ 9 ♀ (M. C. Z. 40850–9) Mt. Debasien, U. 14–22.xi.33.
9 ♂ 8 ♀ (M. C. Z. 40860–9) Sipi, Mt. Elgon, U. 12–14.xii.33.

Distribution. These records constitute the first for the occurrence of this species in Uganda, it has already been recorded from Kenya (Nieden) and Tanganyika (Loveridge).

Native name. Kibaragwesi (Kisabei and Lugishu, but not specific as applied to the larger species which also occurs on Mount Elgon).

Variation. Upper labials 5–7, average for sixty-two sides 5.7, only six sides have 7; lower labials 4–6, average 5.5, only one side has 4; preanal pores 8 in all fourteen males; back, except posteriorly, devoid of enlarged tubercles, a dorso-lateral and a lateral series of tubercles

not quite so developed as in a cotype of *quattuorscriatus*, occupying an intermediate position between that species and *dickersoni* of the Ituri.

Measurements. The largest ♂ ♂ in both localities measure 83 mm., viz. (41 + 42 and 37 + 46) mm. respectively; the largest ♀ (M. C. Z. 40854) measures 79 (38 + 41) mm., but in length from snout to anus is 3 mm. shorter than another with regenerating tail.

Breeding. On November 18, a pair of eggs, measuring 7 x 6 mm., were taken together with a pair of geckos in a rotting log in the dry rain forest at 8,000 feet. On the 21st, another pair of eggs were found among drifted leaves at 4,000 feet; they were broken open and found to be fresh.

Diet. Remains of very small spiders, beetles and ants were recovered from four stomachs examined.

Habitat. On Debasien these geckos occur in the gallery forest of the ravines from 4,000 feet up to the rain forest at 8,000 feet. Several were taken in drifts of leaves lying between the buttress roots of the giant *mvuli* trees, more frequently in rotting logs and in one case beneath a stone in the dry river bed. Several were taken on tree trunks in camp and after sunset one was caught running across a clearing in gallery forest.

Hemidactylus brookii Gray

Hemidactylus brookii Gray, 1844, Zoöl. in Voyage of Erebus and Terror, pl. xv, fig. 2: "Australia; Borneo." (*errore*)

♂ (M. C. Z. 40915) Butandiga, U. 8.i.34.
♂ & yng. (M. C. Z. 40916–7) Tsavo, K. C. 30.iii.34.
♂ ♀ (M. C. Z. 40918–9) Voi, K. C. 7.iv.34.
♂ ♀ (M. C. Z. 40920–1) Kitau, Manda Id., K. C. 16.v.34.

Distribution. Also one from Sokoki Forest (M.J.A.T.).

Variation. Upper labials 6–8, average of eighteen sides 7.5, only one side has 6; lower labials 5–8, average 7.4, only one side has 5; preano-femoral pores 26–46.

Coloration. The Voi female was a very beautiful red as were the three young from Tsavo, this tendency to retain and accentuate the juvenile coloring is probably correlated with the red volcanic soil of the Tsavo-Voi region.

Measurements. The largest ♂ (M. C. Z. 40916) measures 137 (67 + 70) mm., the largest ♀ (M. C. Z. 40918) measures 120 (65 + 55) mm. but the forked tail is in process of regeneration.

Habitat. I personally took all the Kenya specimens in houses or the ruins (Kitau) of a house. The Butandiga gecko was brought in by

a native who possibly took it lower down Mount Elgon than Butandiga, which is 7,010 feet.

Hemidactylus mandanus Loveridge

Hemidactylus mandanus Loveridge, 1936, Proc. Biol. Soc. Washington, **49**, p. 60: Kitau, Manda Island, Kenya Colony.

♀ (M. C. Z. 39995) Kitau, Manda Id., K. C. 15.v.34.

Remarks. This is the holotype of the species.

Hemidactylus mabouia (Moreau de Jonnés)

Gecko mabouia Moreau de Jonnés, 1818, Bull. Soc. Philom. Paris, p. 138: Antilles and adjacent mainland.

6 ♂ 4 ♀ (M. C. Z. 40880–4) Kibwezi, K. C. 23–24.iii.34.
♀ (M. C. Z. 40885) Near station, Tsavo, K. C. 2.iv.34.
2 ♂ 2 ♀ (M. C. Z. 40886–7) Voi, K. C. 10.iv.34.
2 ♂ 4 ♀ (M. C. Z. 40888–9) Mt. Mbololo, K. C. 19.iv.34.
4 ♂ 2 ♀ (M. C. Z. 40890–3) Golbanti, K. C. 2–3.v.34.
♀ (M. C. Z. 40894) Lamu, Lamu Id., K. C. 5.v.34.
♀ & eggs (M. C. Z. 40895) Kitau, Manda Id., K. C. 15.v.34.
♀ (M. C. Z. 40896) Witu, K. C. 30.v.34.
♀ (M. C. Z. 40897) Belazoni, K. C. 6.vi.34.
3 ♂ 1 ♀ (M. C. Z. 40898–9) Ngatana, K. C. 11.vi.34.
♀ & yng. (M. C. Z. 40900–1) Malindi, K. C. 29.vi.34.
2 ♀ (M. C. Z. 40902) Mombasa, K. C. 5–6.vii.34.

Native names. *Molukandua* (Kitaita); *ndikafiri* (Kiamu); *goria* (Kipokomo).

Variation. Preanal pores in seventeen males range from 32–52, average 41. The female from Lamu Island, while undoubtedly *mabouia* in size and scalation, is one of those exceptional individuals which in having 5 (instead of 7–9) pairs of subdigital lamellae under the median digit, agrees with *persimilis* which occurs in the same locality.

Breeding. On May 15, a pair of eggs were collected from the bark of a baobab tree on Manda Island.

Diet. On June 24, at Golbanti on the Tana River, I was seated at breakfast on the verandah of the rest house, when my attention was attracted by a slight commotion among the rafters supporting the grass thatch. A *H. mabouia* had seized a small gecko (*Lygodactylus p. mombasicus*) and was holding the head of the latter in its jaws. The prey was an adult male which twirled its body round and round in a vain attempt to free itself.

Hemidactylus persimilis Barbour & Loveridge

Hemidactylus persimilis Barbour & Loveridge, 1928, Mem. Mus. Comp. Zoöl,, **50**, p. 140, pl. iv, figs. 1 and 3: Dar es Salaam, Tanganyika Territory.

7 young (M. C. Z. 40903–4) Lamu, Lamu Id., K. C. 7.v.34.
3 young (M. C. Z. 41922–3) Mombasa Id., K. C. 5.vii.34.

Hemidactylus frenatus Duméril & Bibron

Hemidactylus frenatus Duméril & Bibron, 1836, Erpet. Gén., **3**, p. 366: South Africa, etc.

11 young & eggs (M. C. Z. 40905–6 Lamu, Lamu Id., K. C. 10–14.v.34.

Hemidactylus werneri werneri Tornier

Hemidactylus werneri Tornier, 1897, Arch. Naturg., **63**, p. 63: Dalalani, Tanganyika Territory.

7 ♂ 5 ♀ & eggs (M. C. Z. 40908–14) Voi, K. C. 9.iv.34.
♀ (M. C. Z. 40000) Ngatana, K. C. 18.vi.34.

Native name. *Goria* (Kipokomo, but not specific).

Variation. Upper labials 6–8; lower labials 5–6; preanal pores 10–20 in six males, 6 in two geckos which are possibly of either sex and very young.

Though the majority of these geckos come from a locality not much more than twenty miles from Bura, type locality of *H. w. alluaudi* Angel, not one of them has the mental separating the chin shields which is the sole characteristic of that race. I am inclined to think that *alluaudi* may have been founded on an aberrant individual.

Coloration in life. Adult ♀ Ngatana. Above, olive variegated with flecks of black and white, the white chiefly on enlarged keeled scales and uniformly arranged in four longitudinal series; edges of digits flecked with chinese white. Below uniform white. Pupil vertically elliptic, black flanked by gold.

Measurements. None of the series is fully grown, they range in size from 43 (23 + 20) mm. to 78 (40 + 38) mm.

Breeding. On April 9, four pairs of detached gecko eggs, from 8 x 8.5 to 9 x 9.5 mm. were found in association with these young geckos in a spot where no other species of geckos were encountered.

Habitat. The whole of the Voi series were taken in a single morning

of intensive search among the crumbling ruins and collapsed thatching of some mud huts on the Msinga Estate, a few miles from Voi. The absence of adults, which are known to live in the burrows of insects or termitaria, leads one to assume that the adults had only resorted to this spot to deposit their eggs.

Hemidactylus tropidolepis squamulatus Tornier

Hemidactylus squamulatus Tornier, 1897, Die Kriechthiere D-O-Afrikas p. 10: Kakoma, Ugundu, Tanganyika Territory.

♀ (M. C. Z. 40907) Changamwe, K. C. 4.vii.34.

Distribution. Also 2 from Sokoki Forest (H.J.A.T.).

Measurements. Total length 84 (44 + 40) mm.

Habitat. This big example of a rare species was taken beneath a pile of rubbish in a native garden and not more than a couple of miles distant from where the male was taken in 1929 (Loveridge, 1933, p. 284).

Bunocnemis modestus Günther

Bunocnemis modestus Günther, 1894, Proc. Zoöl. Soc. London, p. 95, pl. viii: Ngatana, Tana River, Kenya Colony.

1 ♂ 3 ♀ (M. C. Z. 39996–9) Ngatana, K. C. 12–18.vi.34.

Native name. Goria (Kipokomo, but applied to *Hemidactylus spp.* also).

Affinities. It is somewhat problematical as to whether this small gecko should be generically separated from Hemidactylus. It is so closely related to the members of the *H. squamulatus* group, which have imbricate scales on the dorsum and scarcely dilated digits, that the only character of generic significance remaining is the undivided subdigital lamellae.

Unfortunately in the young, many of the subdigital lamellae are so deeply grooved that without very close scrutiny it is extremely difficult to say whether they are paired or single. It will be recalled that Tornier has described a second species, which he referred to this genus, and states that some lamellae are single, some paired, on each digit. The fact that this second species, *matschiei* comes from Togoland raises doubts as to whether these two geckos have not arisen separately from Hemidactylus, on the other hand it is true that the fauna of Tanaland has distinct West African affinities. *B. matschiei*

appears to bridge the slight gap between Hemidactylus and Bunocnemis, but until direct comparison can be made the point had better be left unsettled.

Variation. Upper labials 6–8; lower labials 5–7; preanal pores 14. Considerable variation is displayed in the number of the subdigital lamellae owing to the gradual diminuition in size so that it is often hard to decide as to whether some of those at the base of the digits should be considered lamellae or only transversely-dilated scales; generally it may be said that there are from 6 to 8 under the fingers and longer toes, from 3 (Günther) or 4 to 6 under the inner and outermost toes.

Measurements. The only ♂ (M. C. Z. 39996) measures 73 (45 + 28) mm., but the tip of the tail is undoubtedly reproduced, the largest of the females with a perfect tail, measures 56 (29 + 27) mm., so that we are justified in assuming that normally an uninjured tail should almost equal the length of the head and body.

Diet. Two of the stomachs were empty, the other two contained the abdomen of an isopod (I am indebted to Mr. N. Banks for the identification) and a number of eggs, apparently those of a small species of grasshopper.

Enemies. The hind foot and tail of one female had been lost long ago, the wounds healed.

Habitat. Few reptiles gave me more trouble to secure than did this topotypic series of a gecko known only from the type. I had planned to spend one week at Ngatana but two elapsed before a native brought in the first example of the lizard for which I had been out hunting daily. Describing to me where he had found it, enabled me to catch three more during the following week. These geckos were found in the piles of rubbish and rotting vegetation which had been cleared from the native gardens, situated among the mango trees which mark the site of the vanished village of Ngatana. Their habitat, therefore, is exactly similar to that of *H. squamulatus.*

Lygodactylus fischeri scheffleri Sternfeld

Lygodactylus fischeri scheffleri Sternfeld, 1912, Wiss. Ergeb. der Deut. Zentral-Afrika-Exped. 1907–1908, 4, p. 206: Kibwezi, Kenya Colony.

♂ (M. C. Z. 40994) Voi, K. C. 10.vi.34.

Variation. Upper labials 6–7; lower labials 6–5; supranasals in contact; preanal pores 6; regenerated tail with a single row of transversely enlarged subcaudals.

Coloration. Unfortunately the coloration in life of this handsome little gecko was not recorded; it lacks the jet black patch in front of the fore legs mentioned by Sternfeld; it has six, instead of two, black vertical blotches between the fore and hind limbs, they increase in intensity posteriorly; the faint reddish gray band from neck to root of tail is just discernible.

Measurements. Total length 44 (24 + 20) mm., but tail regenerating; the male type was 51 (24 + 27) mm.

Habitat. Voi is about eighty miles southeast of the type locality. I first caught sight of this specimen as it ran up the trunk of a mango-like tree, which had laurel-like leaves, in fairly dense gallery forest beside the (dry) Voi River. The gecko disappeared beneath a sliver of bark at a height of twenty feet, by throwing up a stick I dislodged the sliver which, together with the gecko, fell to the ground. The reptile dashed up the trunk again and beneath another piece of loose bark where I was able to catch it.

Lygodactylus picturatus picturatus (Peters)

Hemidactylus picturatus Peters, 1870, Monatsb. Akad. Wiss. Berlin, p. 115: Zanzibar.

5 (M. C. Z. 40940–4) Voi, K. C. 10–11.iv.34.

Variation. These are somewhat of intermediates between the typical race and *L. p. mombasicus* but had the mustard-yellow heads of true *picturatus.* They were taken on big trees along the bed of the Voi River where the extreme southeasterly type of *mombasicus* also occurs, the type which is characterized by two well-defined and very distinct dorsolateral bands lying on either side of the vertebral line from neck to root of tail.

Lygodactylus picturatus mombasicus Loveridge

Lygodactylus picturatus mombasicus Loveridge, 1935, Proc. Biol. Soc. Washington, **48**, p. 198: Kilindini, Mombasa Island, Kenya Colony.

32 (M. C. Z. 40924–39) Kibwezi, K. C. 23.iii.34.
5 (M. C. Z. 40945–6) Voi River, K. C. 10–11.iv.34.
1 and eggs (M. C. Z. 40947) Mt. Mbololo, K. C. 16–25.iv.34.
2 and eggs (M. C. Z. 40948–9) Lamu, Lamu Id., K. C. 8.v.34.
1 (M. C. Z. 40950) Kitau, Manda Id., K. C. 16.v.34.
5 (M. C. Z. 40951–3) Witu, K. C. 31.v.34.
29 (M. C. Z. 40954–75) Ngatana, K. C. vi.34.
3 (M. C. Z. 40976–8) Golbanti, K. C. 22.vi.34.
2 (M. C. Z. 40979–90) Kilindini, K. C. 5.vii.34.

Distribution. Also 2 from Sokoki Forest (H.J.A.T.).

Native name. Mvuri (Kipokomo, but not generic. It is interesting to note that this name is applied to the caecilian in Kikami).

Variation. As this has been covered in the description of this pattern race of *picturatus,* it need not be repeated here.

Breeding. On April 16 and 17, 1934, twenty-eight eggs, measuring *circa* 8 x 9 mm., were found under rocks lying against a fallen log at the very edge of the rain forest on Mbololo at 4,000 feet. As they were alive they were mailed to the zoölogical gardens but failed to hatch. On May 8, four pairs of eggs, measuring 8 x 9.5 mm., were collected on Lamu Island, a newly hatched young one appeared in my tent and remained till camp was struck. It measured 23 (12 + 11) mm. On May 31, many eggs were seen attached to verandah posts at Witu. About June 8, a pair of eggs, measuring 9.5 x 9.5 mm., and a young gecko measuring 29 (15 + 14) mm., were taken at Ngatana.

Enemies. An account of how one of these small geckos was being attacked by a larger species will be found under *Hemidactylus mabouia.* At Kibwezi and on Mount Mbololo, three of these geckos were recovered from the stomachs of two Spotted Wood Snakes (*Philothamnus s. semivariegatus*), at Voi from a young House Snake (*Boaedon lineatus*).

Habitat. At Kibwezi on the boles of the numerous baobabs; at Voi on the wild fig trees which fringed the river bed; common on the she-oaks along the front at Lamu; a male was taken on an acacia growing right on the seashore at Kitau; I captured the Witu series on the walls of a hut—an unusual situations for geckos of this genus.

Lygodactylus picturatus gutturalis (Bocage)

Hemidactylus gutturalis Bocage, 1873, Jorn. Sci. Lisboa, p. 211: Bissao, Portuguese Guinea.

11 (M. C. Z. 40981–7) Mt. Debasien, U. 15–30.xi.33.
2 (M. C. Z. 40988–9) Nabagut, U. 7.xii.33.
4 (M. C. Z. 40990–3) Nyenye, U. 8.xii.33.

Distribution. Specimens were also collected on the march at Loborokojo and Kananyait, between Mts. Debasien and Elgon, but decomposed in the heat before they could be preserved.

Native names. Ageragera (Karamojong); *kibaragwesi* (Kisabei).

Variation. Upper labials 6–8; lower labials 5–7; nostril between the first upper labial and 3 (rarely 2) nasals, frequently separated from the lower postnasal by a narrow rim resulting from an upward prolonga-

tion of the first labial; supranasals separated by 1–2 granules in the ratio of 10 to 7; mental followed by 2–3 postmentals in the ratio of 13 to 4, preanal pores 6–8, average 7.3 for nine males.

Measurements. The largest ♂ (M. C. Z. 40987) measures 89 (41 + 48) mm.; the largest ♀ (M. C. Z. 40981) measures 71 (37 + 34) mm.

Breeding. On December 7 and 8, 1933, eggs were found in the decayed interiors of trees at Nabagut and Nyenye respectively.

Enemies. One gecko was recovered from the stomach of a Spotted Wood Snake (*Philothamus s. semivariegatus*) in forest at the foot of Mount Debasien.

AGAMIDAE

Agama rueppelli septentrionalis Parker

Agama rueppelli septentrionalis Parker, 1932, Journ. Linn. Soc. London, Zoöl., **38**, p. 225: Mount Nyero; Madago's village; Voi and Mbunyi, Kenya Colony.

3 ♂ 3 ♀ (M. C. Z. 41003–8) Voi, K. C. 17.iv.34.

Distribution. In 1932, Parker (l.c. pp. 354–5) studied the agamas of this group and came to the conclusion that *vaillanti* Boulenger is a synonym of typical *rueppelli* while for the form inhabiting central and southern Kenya, he proposed the name of *septentrionalis*.

Variation. Scales on the vertebral line 30–33; dorsal scales in an oblique series of the standard length (tip of snout to ear) 11–13.

Measurements. The largest ♀ (M. C. Z. 41003) measures 148 (90 + 58) mm.

Breeding. This female held nine eggs measuring from 17 x 10 mm. to 18 x 9 mm.

Diet. An acridian; stinging ants; head of a fossorial hymenopteran; wings and abdomens of hymenoptera; head and elytra of a beetle.

Habitat. Not uncommon on the stunted thorn trees a few miles outside Voi township.

Agama agama agama (Linnaeus)

Lacerta agama Linnaeus, 1758, Syst. Nat., ed. 10, **1**, p. 207: "America."
Agama colonorum Daudin, 1830, Hist. Nat. Rept., **3**, p. 356: "l'Amérique meridionale," etc.

♂ juv. (M. C. Z. 40135) w. Mt. Debasien, U. 24.xi.33.
4 ♂ 8 ♀ (M. C. Z. 40125–34) near Budadiri, U. 8.i.34.

Distribution. The series of twelve were brought up from the western foothills of Mount Elgon to my camp at Butandiga. I am by no means certain whether the Uganda form may not be subspecifically distinct from the typical race which is supposed to have come from the west coast.

Native name. Ekihobo (Karamojong).

Variation. Midbody scale-rows 74–84; dorsal scales in a standard length 17–24; preanal pores 8–11.

Coloration in life. ♂. Above, head, neck and a wedge-shaped patch from nape to middle of back, vermilion with a few small yellow flecks on occipital region; limbs, back, base and tip of tail, a dark, bluish-black, the median portion of tail bright vermilion. Below, throat and neck rich vermilion flecked with white and gray in such a way as to produce the effect of silver spotting; limbs (except palms and soles), chest, flanks and end of tail bluish-black but not so dark as on the back.

♀. Above, sooty black, apple-green markings on anterior part of head becoming paler on occiput; a longitudinal streak on either flank from opposite the axilla to midbody is cream colored anteriorly shading to, or tipped with, vermilion posteriorly, after an interspace followed by a blotch of vermilion; median vertebral line a lighter greenish white anteriorly, grayish posteriorly; flecks of gray between it and the lateral streaks and also on the limbs. Below, throat white with gray-black vermiculations; chest and belly white, anteriorly and laterally flecked with gray; limbs dirty white flecked with gray; tail white.

♂ juv. (M. C. Z. 40135). A dusky blue patch on base of throat followed by red.

Measurements. The largest ♂ (M. C. Z. 40131) measures 298 + (128 + 170 +) mm., tail tip lacking; the largest ♀ (M. C. Z. 40126) measures 250 (100 + 150) mm.

Breeding. No development is shown in the ovules of the four adult females.

Parasites. Acarine mites under the scales of M. C. Z. 40129., nematodes in M. C. Z. 40132, the only one of eight examined found to be infected.

Habitat. I shot the young male from Mount Debasien on a miombo tree in long grass at an altitude of about 4,000 feet.

Agama agama elgonis Lönnberg

(Plate 6, fig. 2)

Agama elgonis Lönnberg, 1921, Arkiv. för Zoöl., **14**, No. 12, p. 2: Mount Elgon, Kenya Colony.

Agama agama turuensis Loveridge, 1932, Bull. Mus. Comp. Zoöl., **72**, p. 376: Unyanganyi, Turu, Tanganyika Territory.

7 ♂ 1 ♀ (M. C. Z. 41009–15) Sipi, U. 14–22.xii.33.
5 ♂ 2 yng (M. C. Z. 41017–23) Lukungu, U. 8.i.34.
10 ♂ 8 ♀ (M. C. Z. 41024–33) Elgonyi, K. C. 20–31.i.34.

Distribution. All these localities are on Mount Elgon; the series was collected with a view to ascertaining whether the range of variation on *Elgon* would be found to include *turuensis* as I suggested (Loveridge, 1933, p. 299) it might. This was found to be the case.

Native names. Karingis (Kisabei); *gimbiri* (Lugishu); *bakladut* (Kimasai).

Variation. Midbody scale-rows 74–90; preanal pores 10–16, average for twenty-two males 13.3. It is true that the sixty types of *turuensis* average fewer midbody scale-rows, ranging from 72–82, and the average of preanal pores for thirty-four males is less, viz. 11.3, but the overlap is too considerable to make *turuensis* worthy of recognition in view of the face that the gular pattern and colour is the same in both *elgonis* and *turuensis*.

Measurements. The largest ♂ (M. C. Z. 41025) measures 318 (135 + 183) mm., parallelling in dimensions the largest in the series of *turuensis*.

Agama agama lionotus Boulenger

Agama lionotus Boulenger, 1896, Proc. Zoöl. Soc. London, p. 214, pl. viii: southeast of Lake Rudolph, Kenya Colony.

1 ♂ 2 ♀ (M. C. Z. 41034–6) Kacheliba, U. 8.xi.33.
9 ♂ 6 ♀ (M. C. Z. 41037–50) Kibwezi, K. C. 23–29.iii.34.
5 ♂ (M. C. Z. 41051–5) Tsavo, K. C. 30.iii.34.
10 ♂ 4 ♀ (M. C. Z. 41056–9) Voi, K. C. 9–13.iv.34.
11 ♂ 1 ♀ (M. C. Z. 41060–6) Mt. Mbololo, K. C. 16–28.iv.34.

Distribution. Young ones seen among the rocks in the bed of the Karita River, Uganda.

Native names. Ekibobo (Karamojong); *mandari* for adults, *mitarongo* for young (Kitaita).

Variation. Midbody scale-rows 70–84; preanal pores 11–16, average for thirty-six males 13.1.

Coloration. Top of the head mustard yellow, throat red, noted of the Kacheliba male; this is the normal colouring of the head in this race.

Measurements. The largest ♂ (M. C. Z. 41060) measures 340+ (135 + 205+) mm.; the largest ♀ (M. C. Z. 41049) measures 255+ (110 + 145+) mm., the tips of the tails being lacking in both specimens.

Breeding. The three adult females from Kibwezi were all gravid, holding 10, 10 and 12 eggs which measured 15 x 10 mm., 17 x 11 mm., and 20 x 14 mm. respectively. One of the Voi females held 9 eggs measuring approximately 19 x 12 mm.

No deductions should be made as to the relative preponderance of males in the material listed above. Females appear to be more abundant and are certainly easier to collect, a special effort was made to obtain males only.

Diet. Vast numbers of ants, a few beetles, one hemipteron and a caterpillar were present in the stomachs examined; no vegetable matter was noticed.

Parasites. Nematodes (*Strongylurus brevicaudata* and *Saurositus agamae*) were present in some of the Kibwezi and Voi series.

Habitat. In the vicinity of old buildings at Tsavo it was noticed that the young were mostly on the walls of the ruins, the adults chiefly on trees and rocks.

Agama planiceps caudospinosa Meek

Agama caudospinosa Meek, 1910, Field Mus. Nat. Hist. Zoöl. Series, 7, p. 407: Lake Elementeita, Kenya Colony.

Agama agama kaimosae Loveridge, 1935, Bull. Mus. Comp. Zoöl., **79**, p. 10: Near Kaimosi, Kakamega, Kenya Colony.

8 ♂ 11 ♀ (M. C. Z. 40136–50) Near Kaimosi, K. C. 2–9.iii.34.

Native name. Lisiamogoma (Luragoli, but generic).

Synonymy. At the time I described *kaimosae*, I regarded both it and *caudospinosa* as races of *A. a. agama.* In view of the fact that both *A. a. lionotus* and *caudospinosa* occur in the same localities in several areas of Kenya, it seems advisable to treat the forms with depressed bodies as races of *planiceps* rather than of *agama.*

Nearly twenty years elapsed between the time I collected any *caudospinosa* and the series of *kaimosae.* My impression of the former was that they were yellow in life in marked contrast to the gorgeous coloring of *kaimosae.* However that may be, after two years in alcohol, the coloring of *kaimosae* is rapidly approaching that of a cotype of *caudospinosa.* Other races of *agama* which I have described do not

depend on fugitive coloring but on characteristic sexual markings which remain (*vide* Loveridge, 1933, Plate 2).

The other alleged distinguishing character which I cited, that of a markedly less developed spinosity of the tail, on reëexamination I now believe to be the result of abrasion in the whole series of *kaimosae,* which were taken among rocks into whose fissures they fled when disturbed. *A. a. kaimosae* is relegated to the synonymy.

Diet. Large numbers of termites and ants, a few beetles and a considerable amount of vegetable matter.

Parasites. The digestive tracts of these lizards teem with nematodes (*Strongylurus brevicaudatus* and *Physaloptera* sp.)

Folklore. The Watereki have a wonderful saying that if one is bitten by an agama, the site of the bite will cause recurring pain during the rainy season or whenever the bitten person hears thunder!

Agama atricollis Smith

Agama atricollis Smith, 1849, Illus. Zoöl. S. Africa, **3**, Appendix, p. 14: Natal South Africa.

Agama gregorii Günther, 1894, Proc. Zoöl. Soc. London, p. 86: Mkonumbi, Kenya Colony.

14 ♂ 6 ♀ 6 yng. (M. C. Z. 41067–79) Bukori, K. C. 18–19.i.34.
♂ (M. C. Z. 41080) Elgonyi, K. C. 25.i.34.
5 ♂ 4 ♀ (M. C. Z. 41081–9) Kirui's, K. C. 6–7.ii.34.
4 ♂ 4 ♀ (M. C. Z. 41090–5) Kaimosi, K. C. 10–15.ii.34.
3 ♂ 2 ♀ (M. C. Z. 41096–100) Lamu Id., K. C. 7.v.34.

Distribution. I had forgotten that Mkonumbi was the type locality of the synonym *gregorii* or I should have secured topotypes during my short stay there, the Lamu specimens are, however, almost topotypic. Günther's species was based on a single adult male which he compared with *cyanogaster* of Ethiopia, it does not seem possible to separate East from South African examples even subspecifically.

Native names. Kockamonda (Kitosh); *cherengisia* (Kimasai); *lisiamogoma* (Luragoli); *isiamakom* (Lutereki); *kandi* (Kiamu).

Variation. Males possess two, occasionally even three, rows of preanal pores, posterior row has from 8–13 pores, average 11.0, the second 8–12, average 10.1.

Coloration. When brought into camp, one of the Lamu females was brown; after being anaesthetised with cyanide potassium the head

became a most brilliant blue, also the sides except for a line of red spots, vertebral line verdigris green.

Measurements. The largest male (M. C. Z. 41096) measures 303+ (143 + 160+) mm.; the largest female (M. C. Z. 41073) measures 255 (125 + 130) mm., a Lamu female with the same snout to anal measurement has a mutilated tail.

Breeding. Between February 10 and 15, a Kaimosi female held 6 eggs measuring 18 x 11 mm.; on May 7 a Lamu female held 9 eggs measuring 11 x 11 mm.; another, but slightly smaller, taken at the same time held a single egg measuring 21 x 17 mm., it seems possible that the native captor had taken her when engaged in ovipositing.

Parasites. Nematodes (*Physaloptera amaniensis*) were numerous in Kaimosi agamas, presumably it is the same species and *Strongylurus* sp. with which most of the others in the above series are infested.

Enemies. One was recovered from the stomach of a Hissing Sand Snake (*Psammophis sibilans*) at Bukori.

Folklore. The Watereki say that this lizard attracts lightning to a tree or house, the fact is proved because when lightning strikes a tree or house it is usual to find one or more of these lizards lying dead!

An English lad at Kitale told me that he had been told by another boy at Nairobi School, that these lizards are very poisonous and donkey's blood was the only cure for the bite!

ZONURIDAE

Zonurus tropidosternum Cope

Zonurus tropidosternum Cope, 1869, Proc. Amer. Philos. Soc., **11**, p. 169: "Madagascar." (errore)

Zonurus frenatus Pfeffer, 1889, Jahrb. Wiss. Anst. Hamburg, **6**, p. 6: Mhonda, Tanganyika Territory.

1 (M. C. Z. 39955) Sokoki Forest, K. C. vi.1932. H.J.A. Turner.

Distribution. This specimen is the first recorded member of the genus Zonurus to be taken in Kenya Colony, and constitutes a noteworthy northerly extension of the range.

Variation. It differs from the type (M. C. Z. 5742) of *tropidosternum* in that its nasals form a suture which separates the rostral from the frontonasal. Nieden (1913, pp. 71–74) has dealt very fully with the variability of this character, showing how both types occur together on Tendaguru Mountain, near Lindi, and crop up in erratic fashion throughout the Territory.

For this reason I do not refer the Sokoki specimen to *Z. parkeri* Cott, a species whose nasals form a suture in the type but are separated in the paratype, for I think it may eventually prove to be a synonym of *tropidosternum*. Cott was mistaken in assuming that the caudal scales of *tropidosternum* are not serrated, they are as serrated in the type as in the type of *parkeri;* in a juvenile, however, the serrations are not noticeable, though well-developed in adults from the same locality (Morogoro, near Mhonda) as well as in the Sokoki lizard; this would appear to be an age character.

In the type of *tropidosternum* and the Sokoki specimen, the 2nd finger extends a claw and scale length beyond the 5th. In three Morogoro lizards the 2nd finger only extends a claw length beyond the 5th while in the type of *parkeri* "it does not, or scarcely extends beyond the 5th."

The 3rd and 4th fingers are nearly equal, or the 3rd minutely shorter than the 4th in the type of *tropidosternum*, as well as the rest of our series, which would not seem to differ greatly from the condition obtaining in *parkeri* where the "third finger is shorter than the fourth."

The 2nd toe is equal to the 5th in the type of *tropidosternum* so that it was an error to assume that the 2nd extended beyond the 5th in the type of *tropidosternum;* it barely extends to the 5th in the type of *parkeri*, it is shorter than the 5th in the Sokoki lizard, shorter than, or equal to, in the Morogoro series (incidentally it is equal to in *ukingensis*).

The 2nd toe is much shorter than the 4th both in our series of *tropidosternum* (including the type) as well as in the types of both *parkeri* and *ukingensis*, so that alleged difference also disappears.

Measurements. Total length 168 + (86 + 82 +) mm.; the tip of the tail is missing.

Chamaesaura tenuior Günther

Chamaessaura tenuior Günther, 1895, Ann. Mag. Nat. Hist. (6), **15**, p. 524, pl. xxi, fig. B: Kampala, Uganda.

Chamaesaura annectans Boulenger, 1899, Proc. Zoöl. Soc. London, p. 97: Ravine Station, Mau Mountains, Kenya Colony. 7,500 feet.

1 ♂ 5 ♀ (M. C. Z. 41101–5) Kaimosi, K. C. 12.ii.34.

Distribution. I was shown a dried skin, presumably referable to this species, at Kacheliba, northeast Uganda. This would constitute a northward extension of the range.

Native names. Mugoye (Luragoli); *shikoye* (Lutereki).

Variation. Midbody scale-rows 24; longitudinal rows between occiput and anus 38–40; hind limbs monodactyle except M. C. Z. 41104 where they are didactyle; femoral pores 1.

I (1929, p. 59) have discussed the variations and synonymy of a much larger series collected by Heller in this same locality.

Measurements. The largest ♀ (M. C. Z. 41101) surpasses even Heller's largest, it measures 637 (135 + 502) mm., two others have also a head and body length of 135 mm., a third is 137 mm. but the tails are not so fine; the single ♂ (M. C. Z. 41105) measures 97 mm. from snout to anus.

Breeding. All five females are gravid, two examined hold 9 and 10 embryos respectively, one of these latter was measured and found to be 117 (35 + 82) mm.

VARANIDAE

Varanus ocellatus Rüppell

Varanus ocellatus Rüppell, 1827, Atlas Reise nörd. Afrika, p. 21, pl. vi: Kordofan, Anglo-Egyptian Sudan.

Egg & 2 (M. C. Z. 41106–8) Mt. Mbololo, K. C. 25–28.iv.34.
3 (M. C. Z. 41109) Lamu, Lamu Id., K. C. 7.v.34.
1 (M. C. Z. 41110) Kitau, Manda Id., K. C. 15.v.34.
1 (M. C. Z. 41111) Malindi, K. C. 30.vi.34.
1 (M. C. Z. 41112) Sokoki Forest, K. C. vi.1932. H.J.A.T.

Native names. Mongagi (Kitaita); *uru* (Kiamu, Kipokomo and Kiswahili).

Measurements. The largest ♀ (M. C. Z. 41107) measured 1150 (510 + 640) mm., the second ♀ from the same locality had a similar snout to anus measurement but the tip of its tail was lacking. The smallest, one of a series of four young collected by Mr. H. J. Allen Turner, only measures 300 (140 + 160) mm.

Breeding. On April 25, at Mbololo, this large female held 34 eggs, each measuring about 55 x 31 mm., ready for deposition.

Diet. Her stomach was empty except for parasites. Stomach contents of others in the series were as follows: (1) five huge, wingless, stridulating, spiky grasshoppers, a hard-shelled beetle, two millipedes, two operculae of large snails. Mbololo; (2) nine large cockchafers, four hawk-moth larvae, a green caterpillar, numerous small insects. Lamu; (3) many ants, a few termites, a green cetonid and other beetle elytra. Lamu; (4) many cockchafers and smaller beetles, three large

caterpillars, two snails; the intestines also were well-filled with the elytra of beetles. Lamu; (5) many of the hard-shelled, black beetles which are common above high-tide lines, a millipede. Kitau.

Parasites. Ticks (*Amblyomma marmoreum* and *A. exornatum*) were collected on the Mbololo monitors, the second species only on Lamu specimens. Doubtless the ticks occurring on the other monitors in the series are referable to one or other of these species.

Nematodes (*Physaloptera paradoxa*) were collected from the stomachs of the Mbololo and Lamu monitors, a huge mass of them in the gravid female from the first locality. At Kitau a native brought in a fairly large specimen in a terribly emaciated condition, there was little left of the tail but skin and bone. On opening it, I found, as anticipated, a heavy infestation of worms (*Polydelphis* sp.) though the stomach was well-supplied with a good assortment of food as recorded above.

Enemies. Marketed as food by some of the Lamu natives, presumably non-Moslem elements of the population.

Habitat. I was constantly disturbing these huge lizards in the dry underbrush of certain restricted areas on Lamu Island where they must be exceedingly common. I shot the Malindi specimen as it raised its head from the edge of a black, coral-rag cliff as I passed along the reef below; under these conditions the big head reminded me strongly of photographs of Galapagos marine iguanas in similar situations. Its tail was truncated just posterior to the anus, the stump long-since healed.

Varanus niloticus (Linnaeus)

Lacerta nilotica Linnaeus, 1766, Syst. Nat., ed. 12, p. 369: Egypt.

1 (M. C. Z. 41113) Ngatana, Tana River, K. C. 11.vi.34.

Distribution. Also 7 from Sokoki Forest (H.J.A.T.) examined. I especially refrained from collecting more than one of these common and useful lizards. Others were seen at Karita River camp (9.xi.33), Amaler River camp (xi.33), Greeki River camp (4.xii.33), Bukori (18.i.34), Kaimosi (19.ii.34), Tsavo (3.iv.34), Mkonumbi (29.v.34), Belazoni (5.vi.34) and in many spots during my canoe journey up the Tana River.

Native names. Anakana (Karamojong); *imbulu* (Luragoli and Lutereki); *gedo* (Kipokomo).

Enemies. Eaten by the Wapokomo of the Tana River.

AMPHISBAENIDAE

Geocalamus acutus Sternfeld

Geocalamus acutus Sternfeld, 1912, Wiss. Ergeb. Deut. Zentral-Afrika-Exped. 1907–1908, 4, p. 209: Voi, Kenya Colony.

16 (M. C. Z. 41114–23) Voi, K. C. 7–13. iv.34.

Distribution. Sternfeld based his description on two specimens of which the second was attributed to "Deutsch Ostafrika" collected by Huebner. We know, however, that Huebner lived at Kibwezi, west of Voi, for many years and most of the species obtained by him I found at Kibwezi. It seems likely that the second specimen came from that locality. I take this opportunity of restricting the type locality to Voi in view of the possibility of error respecting the place of origin of the second example cited in the original description. At Voi I found it on the flats at Msinga Estate and near the northwest foot of Mount Mbololo.

Native names. Kilimagonde (Kisagalla and Kitaita); *moore* (Kitaita, but this name was also applied to the local caecilian).

Variation. Midbody scale-rows 38–42; transverse rows on body *and* tail 231–245, of which about 21–23 are on the tail; upper labials 3; lower labials 2, except No. 41119 which has 3 like *modestus;* no postfrontal; temporals 2–4 being very subject to subdivision.

Coloration. In life a delicate flesh pink. In alcohol each dorsal scale violet brown edged with lighter, immaculate white below or scales beneath the tail irregularly mottled with violet brown.

Measurements. The largest known specimen, a ♀ (M. C. Z. 41115), measures 281 (248 + 33) mm., the smallest (M. C. Z. 41116) measures 105 (93 + 12) mm.

Breeding. No signs of gestation observed.

Diet. A large individual held what was apparently a young worm or caecilian, another some skin of what may have been a caterpillar, in all there was much soil and grit possibly indicating that they swallow it like earthworms to obtain such nutriment as it may contain.

LACERTIDAE

Lacerta jacksoni Boulenger

Lacerta jacksoni Boulenger, 1899, Proc. Zoöl. Soc. London, p. 96, pl. x: Ravine Station, Mau Mountains, Kenya Colony. 7,500 feet.

Lacerta jacksoni kibonotensis Lönnberg, 1907, in Sjöstedt, Kilimandjaro, Meru Exped., 4, Rept. & Batr., p. 5: Kibonoto, Mount Kilimanjaro, Tanganyika Territory.

55 (M. C. Z. 41124–50) Sipi, U. 12–24.xii.33.
1 (M. C. Z. 41151) Buluganya, U. 12.i.34.
2 (M. C. Z. 41152–3) Elgonyi, K. C. 20.i.34.
17 (M. C. Z. 41154–63) Kaimosi, K. C. 10–28.ii.34.
6 (M. C. Z. 41164–9) Mt. Mbololo, K. C. 18.iv.34.

Distribution. Boulenger's locality "Kegamaia" is a corruption of Kakamega, the specimens actually came from Kaimosi, Kakamega as did those listed above. As the species has been recorded from Mombo it may descend to below a 1,500 foot level though more abundant in montane forests at 6,500 feet. Lönnberg (1922, p. 3) had already recorded it at that altitude on the eastern slopes of Mount Elgon, the first three localities cited above are at approximately the same altitude on the western and southern aspects.

Native names. *Mabusiiba* (Lugishu); *kelondangombe* (Luragoli); *shinakombero* (Lutereki); *malasagasa ya murtu* (Kitaita).

Variation. Based on fifty specimens only. Midbody dorsolateral scale-rows 37–49, except for one lizard (M. C. Z. 41134) with 54, average 43.1; the outer rows of the ventrals while normally enlarged sufficiently to be counted, making 8 longitudinal rows, are quite frequently so reduced that they should not be reckoned as such; normally 4 labials anterior to the subocular but 5 occurring on one side of the head, or both, in *every* locality; femoral pores on right leg 15–21, average 18.

Measurements. The largest ♂ (M. C. Z. 41129) measures 204 (81 + 123) mm.

Breeding. Two females from Sipi hold ova of 4 and 7 mm. diameter respectively, two others from Kaimosi, approximately two months later, each held four eggs, the lots measuring 14 x 7 and 15 x 7 mm. respectively.

Diet. Ten stomachs examined, held the following: (1) moth, (2) moth, (3) moth and small beetle, (4) beetles, (5) beetles, (6) big beetle and weevil, (7) many beetles including weevil and spiders, (8) numerous hard-shelled beetles, two spiders and a cockroach, (9) two crickets with long ovipositors, (10) spiders.

Parasites. Larval tapeworms of the Dithridium group (which complete their development in carnivores) infested the peritoneal surfaces of both abdomen and liver in several of the Sipi lizards.

Enemies. The tail of one of these lizards was recovered from the stomach of a green snake (*Chlorophis hoplogaster*) at Sipi, the lizard itself had evidently escaped.

Habitat. In a deforested area at Buluganya, I disturbed a Jackson's lizard under debris of plantains in a banana plantation by the river. While writing in my tent in a forest clearing at Elgonyi, I saw and caught one of these lizards as it was running over my boxes, the second specimen from that locality, where they appeared to be scarce, I shot as it was basking beside a hole in the tree in which it lived. I shot the Mbololo series on big trees on the eastern, northern and southern edges of the forest cap at 4,800 feet.

Folklore. The Luragoli name for this arboreal lizard refers to their belief that it 'follows the cows', it would seem as if they had confused it with some other species of terrestrial lizard but no other was taken in the vicinity. It is probable that the belief was imported into the district when the people migrated there.

Algiroides alleni Barbour

(Plate 7, fig. 1)

Algiroides alleni Barbour, 1914, Proc. New England Zoöl. Club, 4, p. 97: northeast slope Mount Kenya, Kenya Colony.

28 (M. C. Z. 41170–89) Kaburomi, U. 27–30.xii.33.
1 (M. C. Z. 41190) near Madangi, U. 2.i.34.

Distribution. Both these localities are on the western slopes of Mount Elgon in the alpine zone at 10,500 and 11,500 feet respectively. They constitute the first records of the occurrence of this species on Mount Elgon though Mr. H. W. Parker tells me that the British Museum has a series from Majuwa (? Mujur of map) on the mountain.

Corrigenda. Two important corrections are necessary to the key of the genus Algiroides given by Boulenger (1920, p. 339). He includes *alleni* in the section of the key with "temporal scales keeled" whereas the types, as well as all in the above series, have smooth temporals as in the European forms. The word 'dorsals' appears to have been inadvertently dropped from the last line of the key (p. 340) which was intended to read "the laterals and anterior dorsals entirely smooth."

Variation. Nostril between two nasals, first labial, and frequently the rostral also; a supernumary loreal split off from the postnasal

in one specimen; supraoculars in contact with supraciliaries in all; parietals in contact with upper postocular in 24 lizards, separated on right side in 1 (M. C. Z. 41175), on both sides in 4 (M. C. Z. 41171, 41173–4); temporals smooth in all; enlarged plates in collar 4–6, usually flanked on either side by a smaller one; transverse rows of ventrals from collar backwards 22–29, average 25.3; longitudinal rows of dorsolaterals at midbody 18–22, average 20.7; lamellae under fourth toe 16–21, average 18.3; femoral pores 10–13, average 11.3.

Coloration in life. ♂. Above, crown of head and broad dorsal band ochraceous brown, each head scale with one spot of sepia brown, inner edge of supraoculars deep black; a narrow, black, vertebral line from occipital scale to tip of tail; a lateral band (three scales wide) deep brown narrowly bordered by a black and then a pale yellow line both above and below, these tend to converge as they approach the tail; sides of body and limbs flecked with deep black; upper lip white, each of the posterior labials with a black spot. Below, throat to gular fold iridescent, slightly greenish, white; rest of under surface of body, hind limbs, and tail, deep orange which becomes paler towards the sides.

♀. Above, as in male but much darker. Below, throat to gular fold dull white, gular fold to in front of anus slightly greenish white, around anus faintly tinged with orange; below tail salmon pink.

It is interesting to observe the close similarity in pattern and coloring of many of the *Mabuya v. varia* which occur in similar situations at Kaburomi and exhibit similar habits.

Measurements. The largest ♂ (M. C. Z. 41177) with perfect tail, measures 147 (52 + 95) mm., a ♀ (M. C. Z. 41171) measures 58 mm. from snout to anus but has a regenerated tail. More than half the series have regenerated tails, indeed it is most unusual for an adult to have a perfect tail.

Breeding. The testes of the males are large but none of the females has indications of developing ova.

Diet. In addition to more minute insects, the following stomach contents were noted: (1) caterpillar, (2) caterpillar, (3) caterpillar and ant, (4) caterpillar and winged ant, (5) apparently a full-fed lycaenid caterpillar, (6) caterpillar and spider, (7) spider and orthopteran, (8) spider and praying mantid, (9) cockroach and beetle, (10) three small beetles.

Habitat. These lizards occur in the alpine meadows above the timber line. They sleep in the dense tussocks of grass growing about clumps of the cactus-like Acanthus from which they emerge to bask

in the sunshine during the middle of the day (*circa* 10 a.m. to 3 p.m.). If disturbed while basking they are quick to seek refuge under the base of the plant but are not very difficult to dislodge with a stick. When captured they make some show of biting but their tiny teeth have no effect on the human skin.

None was seen in the vicinity of the rest camp at Madangi, though they probably occur there as *M. v. varia* is common enough in the neighborhood, the specimen listed was actually taken six or seven miles north of Madangi.

Latastia longicaudata revoili (Vaillant)

Eremias revoili Vaillant, 1882, Miss. Révoil Pays Comal., Rept., p. 20, pl. iii, fig. 2: Somaliland.

16 (M. C. Z. 41191–200) Kibwezi, K. C. 23–24.iii.34.
1 (M. C. Z. 41201) Tsavo, K. C. 4.iv.34.
3 (M. C. Z. 41202–4) Voi, K. C. 10.iv.34.
3 (M. C. Z. 41205–7) Mbololo Mt., K. C. 20.iv.34.
1 (M. C. Z. 41208) Malindi, K. C. 29.vi.34.

Distribution. Also 1 from Sokoki Forest (H. J. A. T.).

Native name. Ngozo (Kitaita, but not specific).

Variation. Midbody dorso-lateral scale-rows 58–67, average 63.1; gular scales between symphsial and collar 32–43, average 36.2; transverse rows of ventrals 26–30, average 28.2; lamellae beneath fourth toe 22–29, average 24.4; femoral pores 8–11, average 9.5.

Coloration. A pair taken in *coitu* at Kibwezi clearly displayed the dimorphic coloring. The ♂ showing much darker transverse barring than the female, in the latter such bars being only faintly indicated. In the ♀ the longitudinal lines are either much more pink than in the ♂ or show to better advantage.

Measurements. Both the largest ♂ (M. C. Z. 41201) and ♀ (M. C. Z. 41198) possess regenerated tails, from snout to anus they measure 100 mm. and 82 mm. respectively.

Breeding. Three females taken at Kibwezi each held 4 eggs, these ranged from 6 x 6 mm. to 8 x 5 mm.; a Voi female held 3 eggs measuring 10 x 7 mm.; two Mbololo females each held 3 eggs measuring 11 x 7 mm.

Diet. Of the ten stomachs examined, seven held grasshoppers, one being distended with numerous newly-hatched grasshoppers besides an adult; of those remaining, two were distended with termites and one held a large smooth-skinned caterpillar.

Parasites. Small larval tapeworms (*Dithyridium*) were present in the body cavity of a Kibwezi lizard.

Enemies. The largest male was recovered from the stomach of a Two-striped Sand Snake (Psammophis biseriatus) at Tsavo, possibly it fell an easy prey because it was so gorged on termites, also it had no tail to discard as it was regenerating from the basal stump. At Mbololo another was found in the stomach of a Spotted Sand Snake (*Psammophis punctulatus*).

Habitat. I ran one to earth in a rat hole in a cotton plantation from which I had previously seen it emerge, and at the entrance of which it was basking. Though both nest and food of the rodent were in the burrow the owner was absent.

Eremias neumanni Tornier

Eremias neumanni Tornier, 1905, Zoöl. Jahrb. Syst., **22**, p. 376: Brussa Valley, north of Lake Stephanie, Ethiopia.

66 (M. C. Z. 40201–50) Ngatana, Tana River, K. C. 11–16.vi.34.

Distribution. These constitute the first record of the occurrence of this species in Kenya Colony, and are the first examples taken since the type was described thirty years ago. Ngatana is rather more than 500 miles southeast of the type locality.

Native name. Mvuvi (Kipokomo, but not specific. This is the word for a caecilian in Kiuluguru).

Affinities. Boulenger (1921, p. 20) suggested that this species was identical with *Eremias siebenroeki* Tornier of Porto Novo, Dahomey, which he transferred to the genus Latastia on the strength of Nieden's remarks (1913, p. 77). Elsewhere (1933, p. 306) I have shown the falsity of Nieden's conclusions resulting from his identifying *Latastia johnstoni* with *E. siebenroeki.*

E. neumanni is certain to be distinct from *siebenroeki* and is undoubtedly an Eremias though possessing many characters common to Latastia and in Boulenger's key (1921, p. 227) heading the list by falling into Section I, A.

Variation. The following addition to our knowledge of variation in this species, is based on the individual examination of the fifty tagged examples from Ngatana.

Midbody dorsolateral scale-rows 40–48, average 43.8 (the type had 46); transverse rows of ventrals 22–30, extremes rare, average 25.6 (the type had 26); longitudinal rows of ventrals 6 (the type had 8,

Tornier presumably counted as ventrals the outer row of very small smooth scales which Boulenger treats as laterals); nostril between three nasals (except on the right side of M. C. Z. 40205 where fusion of the upper and lower postnasals has taken place) separated from the first upper labial by a narrow rim; 5 labials anterior to the subocular as in the type, except for five specimens where there are 4 and three where there are 6; femoral pores 8–12, average 10 (the type had 10). For the last two items, labials and pores, only the right jaw and right leg of each specimen were examined.

Measurements. The largest specimen, a ♀ (M. C. Z. 40248) measures 146 (53 + 93) mm., but is 12 mm. larger than the next of which there are half-a-dozen with a head and body length of 47 mm. The smallest example (M. C. Z. 40234) measures 66 (25 + 41) mm.

Breeding. It seems possible that the main breeding season was over though half-a-dozen females were gravid. One held 3 eggs measuring 8 x 6 mm., another 3 measuring 9 x 5 mm.,a third 2 eggs measuring 11 x 6 mm.

Diet. Spiders, as many as half-a-dozen in one stomach, would appear to constitute the principle article of diet with orthoptera, chiefly young grasshoppers, a close second. The egg capsule of a cockroach, but no cockroach, was present in one stomach. It should be borne in mind, however, that small insects which are masticated beyond recognition, may figure in the menu quite considerably.

Parasites. Two larval Spiuroidea present in one stomach.

Enemies. One Neumann's lizard was recovered from the stomach of a snake (*Boaedon lineatus*).

Eremias spekii spekii Günther

Eremias spekii Günther, 1872, Ann. Mag. Nat. Hist. (4), **9**, p. 381: Unyamwezi, Tanganyika Territory.

Eremias rugiceps Peters, 1878, Monatsb. Akad. Wiss. Berlin, p. 202, pl. ii, fig. 1: Taita, Kenya Colony.

38 (M. C. Z. 41209–41) Kibwezi, K. C. 23–30.iii.34.
9 (M. C. Z. 41242–9) Mt. Mbololo, K. C. 23–28.iv.34.
1 (M. C. Z. 41250) Sokoki Forest, K. C. vi.32. H. J. A. Turner.

Distribution. The series from Mount Mbololo, Taita, are topotypes of *E. rugiceps* Peters, which has the characteristics of the typical race and has been referred to its synonymy by Boulenger (1921, p. 235). The Sokoki Forest lies but a few miles south of Malindi and thus marks

the northern limits of the typical form upon the coast, it was one of a series collected there in 1932, now in Nairobi Museum.

Native name. *Ngozo* (Kitaita, but not specific).

Variation. Femoral pores 12–18, average for thirty-one specimens 15. All agree with the type in having the subocular bordering the lip, but the Sokoki lizard approaches the northern race in having six, instead of five, light longitudinal lines on the posterior half of the body.

Measurements. The largest ♂ (M. C. Z. 41237) measures 184 (60 + 124) mm., the largest ♀ (M. C. Z. 41210) has the same length (60 mm.) from snout to anus but has a regenerated tail. These surpass any in Boulenger's fine series.

Breeding. Four gravid females in the Kibwezi series were found to be carrying ova, 4 in three instances, 5 in one. These measured 5 x 5 mm., 9 x 6 mm., 11 x 6 mm., and 11 x 6 mm., these last two lots were clearly ready for laying. At the same time it was noticed that considerable numbers of young *spekii* were running about the paths, such juveniles measured about 85 (30 + 55) mm.

Diet. Termites were present in each of ten stomachs examined, in addition one held an antlion, another a relatively large spider.

Parasites. One of the Kibwezi series was found to be affected with the same larval tapeworm (*Dithyridium*) already recorded for *Latastia l. revoili.*

Enemies. A Speke's Lizard was recovered from the stomach of a Cape Wolf Snake (*Lycophidion c. capense*).

Eremias spekii sextaeniata Stejneger

Eremias sextaeniata Stejneger, 1883, Proc. U. S. Nat. Mus., **16**, p. 718: Tana River, Kenya Colony.

13 (M. C. Z. 41251–9) Karita River Camp, U. 9.xi.33.
7 (M. C. Z. 41260–6) Mkonumbi, nr. Witu, K. C. 28.v.34.
3 (M. C. Z. 41267–8) Golbanti, Tana R., K. C. 23.vi.34.
3 (M. C. Z. 41269–70) Karawa, K. C. 26.vi.34.
2 (M. C. Z. 41271–2) Malindi, K. C. 28.vi.34.

Distribution. The Golbanti specimens may be considered topotypes. The series from Karita River appear to constitute the first records for Uganda for as I have shown elsewhere (1929, p. 64), Boulenger's inclusion of Uganda in the distribution was based on a specimen from Ndi, Uganda Railway, Kenya. This fresh material bears out the views already expressed (1929, p. 65) as to the meeting points of the two races, Takaungu being just south of the Malindi-Sokoki area.

Native names. *Agerigeri* (Karamojong, probably for lacertids in general).

Variation. With the exception of a Malindi Lizard (M. C. Z. 41271) where the arrangement on the right side of the head is that of the typical form, all the series agree with the types of *sextaeniata* in having the subocular excluded from the lip by labials.

Labials anterior to middle of orbit 4–5, in equal proportions; dorsolateral scales at midbody 58–74, average 63.8; longitudinal rows of ventrals 6; transverse rows of ventrals 23–29 (but only nine specimens examined); plates in collar 6–9, average 7; lamellae under fourth toe 20–25, average 21.7; femoral pores 10–17, average 13.6.

Coloration in life. The color of Mkonumbi specimens was much brighter than those from Karita River which presented an appearance very similar to the typical form though possessing the six lines of *sextaeniata.*

At Mkonumbi the dorsal pair of lines are cream colored; the dorsolateral china white anteriorly, cream faintly tinged with yellow posteriorly; the outer lateral 'lines' are broken up into a series of pale yellow dashes below which is a series of pale green dots that touch the outermost row of ventrals.

At Golbanti the brick-red ground color was brighter in some specimens than in others, the lines pure white, the 'line' of lateral spots white, the lower series grass-green.

Measurements. The largest ♂ (M. C. Z. 41265) measures 158 (48 + 110) mm., the largest ♀ (M. C. Z. 41259) measures 148 (48 + 100) mm.

Breeding. At Karita River, most, if not all, of the females were gravid with developing ova of 2.5 x 3.5 mm. to eggs of 11 x 6 mm. An Mkonumbi ♀ held 4 eggs measuring 9 x 6 mm. At Karawa a young lizard was captured which measured only 63 (23 + 40) mm.

Diet. As in the typical form, termites predominated, being present in the half-dozen Karita lizards examined, a large caterpillar was present in one. A caterpillar was also found in the stomach of an Mkonumbi specimen.

GERRHOSAURIDAE

Gerrhosaurus major major Duméril

Gerrhosaurus major Duméril, 1851, Cat. Méthod. coll. Rept., Paris, p. 139: Zanzibar.

Gerrhosaurus bergi Werner, 1906, Zoöl. Anz., **30**, p. 54, figs. 1–3: Usambara Mountains, Tanganyika Territory.

♂ (M. C. Z. 41273) Voi, Kenya Colony. 10.iv.34.
♂ (M. C. Z. 41274) Mt. Mbololo, K. C. 22.iv.34.

Distribution. Also 3 from Sokoki Forest (H. J. A. T.).

Variation. Longitudinal rows of dorsals 19–20; longitudinal rows of ventrals 10; frontonasals paired as in *bergi*, in contact with the rostral in the ♀, separated from the rostral by the supranasals which form a broad suture in the ♂. Fairly recently, I (1929, p. 66) discussed the instability of the head shields in this species.

Measurements. The ♂ measures 440 (180 + 260) mm., the ♀ measures 518 (206 + 312) mm.

Breeding. The latter holds a single developing, 114 mm., ovum in addition to numerous smaller ova.

Parasites. Nematodes (*Physaloptera* sp.) were removed from the Voi specimen.

Habitat. I dislodged her from among drifted leaves in a rock fissure in dense thorn scrub, after disturbing her basking in the vicinity.

Gerrhosaurus flavigularis flavigularis Wiegmann

Gerrhosaurus flavigularis Wiegmann, 1828, Isis, p. 379: "Africa merid. Krebs."
Gerrhosaurus flavigularis forma *intermedia* Lönnberg, 1907, in Sjöstedt, Kilimandjaro, Meru Exped., 4, Rept. & Batr., p. 7, pl. figs. 1 a–b: "on the steppe near the Natron lakes, Kibonoto," Tanganyika Territory.

12 (M. C. Z. 41275–9) Voi, Kenya Colony. 7–10.iv.34.
4 (M. C. Z. 41280–2) Mt. Mbololo, K. C. 19.iv.34.
1 (M. C. Z. 41283) Ngatana, K. C. 17.vi.34.
1 (M. C. Z. 41284) Golbanti, K. C. 22.vi.34.

Distribution. Also 7 from Sokoki Forest (H. J. A. T.).

Native names. Malombo (Kitaita); *nakavara* (Kipokomo).

Variation. Longitudinal rows of dorsals 20–22; longitudinal rows of ventrals 8; femoral pores 13–15, average 13.5; prefrontals broadly, or barely, in contact except in two Voi lizards where they are separated; laterals keeled or smooth in Mbololo series.

Measurements. All are considerably smaller than the largest Tanganyika records, the largest (M. C. Z. 41280) is a ♀ measuring 475 (142 + 333) mm., three others have a head and body length of 142 mm.

Breeding. In both Voi and Mbololo females are ova in all stages of development, the best developed consist of four eggs each almost ready for deposition; eggs in these three lots measure approximately 27 x 15 mm., 24 x 11 mm., and 21 x 11 mm. respectively.

Diet. Stomach contents consisted of: (1) grasshopper, (2) grasshopper, (3) three grasshoppers, (4) grasshopper and grass, (5) a locust about four inches in length, (6) several crickets of two species, (7) two cockroaches and what appeared to be beetle remains, (8) scales of a large Gerrhosaurus, apparently part of the cast skin of the lizard in whose stomach they were found.

SCINCIDAE

Mabuya maculilabris (Gray)

Euprepis maculilabris Gray, 1845, Cat. Liz. Brit. Mus., p. 114: West Africa.

9 (M. C. Z. 41285–90) Mt. Debasien, U. 14–29.xi.33.
1 (M. C. Z. 41291) Below Sipi, U. 15.xii.33.
3 (M. C. Z. 41292–3) Kau, Tana R., K. C. 4.vi.34.
1 (M. C. Z. 41294) Golbanti, K. C. 23.vi.34.
5 (M. C. Z. 41295–7) Ngatana, K. C. 17–20.vi.34.
1 (M. C. Z. 41298) Changamwe, K. C. 4.vii.34.

Distribution. Also 1 from Sokoki Forest (H. J. A. T.).

Native names. Lamatwan (Karamojong); *kikomiakav* (Lugishu); *mvuvi* (Kipokomo, but not specific).

Variation. Midbody scale-rows 30–34, this range holds good for Mount Debasien alone, from whence came the only specimen with 30 scales; keels on dorsal scales 5–9; supraoculars 4; supraciliaries 4–6, normally 5; prefrontals in contact in 4 skinks, separated in 16; supranasals in contact in 3 skinks, separated in 17.

Coloration in life. A male from Mount Debasien had the sides of its head and throat lemon yellow shading to a brick orange on the flanks. The male from Sipi had the lower lip, anterior half of the body and the flanks suffused with red like the laterite soil of the vicinity where it was taken.

My general impression in the field was that the Debasien series were more uniformly brown and rather more slender in habit than those taken at the coast and at Sipi on Mount Elgon where the rainfall, resulting in greater abundance of insect life, is more plentiful. The Sipi male and coastal series approximate to Sternfeld's race of *major.*

Measurements. The largest ♂ (M. C. Z. 41293) measures 200 (86 + 124) mm., the largest ♀ (M. C. Z. 41294) measures 218 (95 + 123) mm., but are surpassed in tail length by a ♂ with a 142 mm. tail and a ♀ whose tail measures 146 mm.

Breeding. Females were gravid both inland and on the coast, thus

a ♀ taken on Mount Debasien, November 29, 1933, held 5 eggs measuring 11 x 7 mm., an Ngatana ♀, taken June 17–20, 1934, held 13 eggs (which must constitute a record for the species ?) measuring 12 x 8 mm.

Habitat. Between 5,000 and 7,000 feet on Mount Debasien where one was captured among undergrowth on an earthy bank, another on rocky ledges in a stream bed, a third basking high on a tree trunk, a fourth on a pile of vegetation and yet another beneath sacks in a tent. The Ngatana series were on the walls of a deserted building by the river bank. The Changamwe male in the matting sheath of a young coconut palm at a height of six feet from the ground.

Mabuya planifrons (Peters)

Euprepes (*Euprepis*) *planifrons* Peters, 1878, Monatsb. Akad. Wiss. Berlin, p. 203, pl. ii, fig. 2: Taita, Kenya Colony.

Euprepes (*Euprepis*) *taitanus* Peters, 1878, Monatsb. Akad. Wiss. Berlin, p. 203, pl. ii, fig. 3: Taita, Kenya Colony.

Mabuia diesneri Sternfeld, 1911, Sitzber. Ges. Naturf. Freunde Berlin, p. 248: Kibwezi, Kenya Colony.

1 (M. C. Z. 41311) Kibwezi, K. C. 23.iii.34.
3 (M. C. Z. 41312) Voi, K. C. 9.iv.34.
10 (M. C. Z. 41313–20) Mt. Mbololo, K. C. 23.iv.34.
5 (M. C. Z. 41323–6) Lamu, Lamu Id., K. C. 7.v.34.
2 (M. C. Z. 41327–8) Kitau, Manda Id., K. C. 15.v.34.
1 (M. C. Z. 41329) Peccatoni, K. C. 26.v.34.
2 (M. C. Z. 41321–2) Golbanti, K. C. 22.vi.34.
4 (M. C. Z. 41330–3) Malindi, K. C. 28.vi.34.

Distribution. Seen also at Witu and Mkonumbi, and 3 from Sokoki Forest (H. J. A. T.) examined. These records show that this species extends right up the coast and serves to link Lönnberg's record for Kismayu, Italian Somaliland and Parker's for Nogul Valley, British Somaliland with the type locality.

It will be noted that a good series of topotypes of *planifrons* and *taitanus* were obtained on Mbololo in Utaita, in addition to a single topotype of *diesneri* during the week spent at Kibwezi.

Native name. Jumbakoka (Kiamu).

Synonymy. The topotype of *diesneri* served to confirm me in my action of referring this species to the synonymy of *planifrons* (1923, p. 956). I now add *taitanus* which was based on a younger specimen than the type of *planifrons*. With one exception there is nothing in the

descriptions which is not within the range of age and variation in *planiceps*.

At the time of publication of the Catalogue of Lizards, vol. **3**, only the types were known. They had, however, been seen by Boulenger (1887, pp. 167, 171) who differentiated them thus:

Ear lobules, if present, short. . . . . *planifrons*
Ear opening partly concealed under the rounded scales of its anterior border. . . . . *taitana*

In one of my topotypes which has received a blow on one side of the head, the ear opening corresponds to the above description for *taitana* on that side but is like *planifrons* on the other. As, to the best of my belief, no second specimen of *taitana* has been taken since it was described nearly sixty years ago, I respectfully suggest that a careful reëxamination of the type will show that the head has either been slightly damaged, or else forced back against the neck prior to fixation, which would result in the rounded scales of the anterior border of the ear-opening partly concealing the aperture.

Variation. Midbody scale-rows 26–30, only one of the former and two of the latter, normally 28, three with 29; scales tricarinate except for three specimens which have quinquecarinate scales though the outermost pair are faint; supranasals in contact; prefrontals separated[1] except for three individuals in which the frontonasal and frontal form a X suture; supraoculars 4; supraciliaries 4–7, normally 5; supralabials anterior to subocular 4–5, more frequently the former.

Relative limb length is an age character, thus in a young skink measuring 30 mm. from snout to anus, the adpressed hind limb reaches to the elbow of the backward-pressed fore limb while in a 113 mm. adult the tips of the toes barely meet those of the fingers.

Coloration. The great majority of these Kenya specimens differ from those of Tanganyika by the conspicuous lines of black spots down the length of the back, the nut-brown instead of khaki ground colour, and more vivid coloring generally.

In this respect the Tanganyika skinks serve to link these typical *planifrons* with *binotata* Bocage of Angola (a valid species erroneously referred to the synonymy of *quinquetaeniata* by Boulenger (1887, p. 198)). As one proceeds northward *planifrons* appears to give rise to *somalicus* Calabresi distinguished by having 32 midbody scale-rows as a normal condition instead of a rare one as is the case with Kenya and

[1] The condition in all the Tanganyika series listed in Bull. Mus. Comp. Zoöl., **74**, p. 315 where a misprint read "prefrontals in contact" instead of "prefrontals not in contact."

Tanganyika *planifrons*. Ultimately both *planifrons* and *somalicus* may prove to be races of *binotata* which was described in 1867.

Measurements. The largest ♂ (M. C. Z. 41330) measures 253 (113 + 140) mm. but is surpassed in tail length by others with tails of 208 and 205 mm., the largest ♀ (M. C. Z. 41321) measures 339 (107 + 232) mm.

It will be seen that the tail may constitute two-thirds of the total length, a condition only met with in *megalura* so far as East African skinks are concerned. So long a tail, however, is exceptional for there seems to be a good deal of individual variation in this respect.

Breeding. Testes large in several of the males examined, ova small in the largest ♀ (M. C. Z. 41321) taken on June 22, 1934, when sunning with another on a hollow tree in scrub country.

Diet. Stomachs examined held: (1) locusts, (2) 3 grasshoppers, 2 large caterpillars, (3) 2 grasshoppers, 2 large caterpillars, (4) cricket and hard-shelled beetle, (5) a great many small beetles, (6) small beetles.

Habitat. Captured in crumbling ruins of native huts at Voi. 'On Lamu Island they were fond of sunning on logs or piles of coconut-palm fronds, when seriously disturbed they would dash for the nearest palm and, ascending the stem with great celerity, soon be lost among the dense foliage above. On Manda Island one was basking on a stump at 9 a.m., the other on the stem of an acacia in the late afternoon. Perhaps the majority were found sunning on fallen logs for which they appeared to display a preference.

Mabuya brevicollis (Wiegmann)

Euprepes brevicollis Wiegmann, 1837, Arch. für Natur., p. 133: Ethiopia (as Abyssinia).

Mabuya chanleri Stejneger, 1893, Proc. U. S. Nat. Mus., **16**, p. 721: Tana River, Kenya Colony.

1 (M. C. Z. 41299) Karita Camp, U. 9.xi.34.
4 (M. C. Z. 41300–3) Kibwezi, K. C. 23–25.iii.34.
3 (M. C. Z. 41304–6) Tsavo, K. C. 4.iv.34.
3 (M. C. Z. 41307–9) Voi, K. C. 9.iv.34.
1 (M. C. Z. 41310) Mt. Mbololo, K. C. 22.iv.34.

Variation. Midbody scale-rows 32, except for M. C. Z. 41305 which has 30; supranasals in contact in 6 specimens, separated in 6; prefrontals in contact in 4 specimens, separated in 8; frontal in con-

tact with 1st and 2nd, or 1st, 2nd and 3rd supraoculars; supraoculars 4; supraciliaries 4–6, average exactly 5.

Coloration. Two young, measuring 50 and 54 mm. from snout to anus, were taken at Kibwezi and Mount Mbololo respectively. They are black with white spots and are so distinct from the adult coloring that it is small wonder that Stejneger made one the type of a supposedly new species, *chanleri*. Such young are rare in collections.

Measurements. The largest specimens are all males, the maximum length from snout to anus is 150 mm. (M. C. Z. 41306), the longest tail measures 170 mm. (M. C. Z. 41301).

Breeding. The testes of four males examined were small.

Diet. Stomachs examined held: (1) locust, (2) grasshopper, (3) many small grasshoppers, (4) termites.

Parasites. Nematodes of a new genus and species and ♀ ♀ of an oxyuroid (*Pharyngodon* sp.) were present in two of four skinks examined from Kibwezi and Tsavo.

Enemies. One Voi specimen was recovered from the stomach of a sand snake (*Psammophis biseriatus*).

Habitat. At Kibwezi these skinks occur among the piles of lava which cover so much of the country east and west of Kibwezi station. On being approached they slip quietly away so that it is more usual to obtain a glimpse of a vanishing tail than of a skink. The only way to obtain them was by shooting with dust shot from a .22 gun. Owing to the exceptionally hot weather, these skinks only appeared to bask for an hour or two in the early morning so that one had to restrict hunting to this limited period. I never saw more than two in an hour and considered myself fortunate if one of these was secured.

The day after our arrival at Tsavo, I caught sight of one of these skinks disappearing among the ruins of a native hut; it had been basking on the crumbling lumps of mud of which the walls had been composed. Though I revisited the place time and again I never got another glimpse of the reptile. A native was set to work with a pick and shovel to remove the wall, a dusty and unsavoury task. After I had watched him remove half-a-cartload, we gave up, and I ordered him to set two snap-back rat traps baited with cheese. On previous occasions this method had proved successful, the skink being attracted by the insects which gathered on the bait. The following day we took the skink from the trap and shortly afterwards secured a second at the same spot, in the same trap.

Mabuya megalura (Peters)

Euprepes (*Mabuia*) *megalura* Peters, 1878, Monatsb. Akad. Wiss. Berlin, p. 204, pl. ii, fig. 4: Taita, Kenya Colony.

3 (M. C. Z. 41334–6) Kaimosi, K. C. 25.ii.34.
1 (M. C. Z. 41337) Malindi, K. C. 29.vi.34.

Distribution. A very fine specimen escaped me at Ngatana, it was clambering about in long grass at a height of three feet from the ground.

Native name. Lubuyu (Luragoli). It is surprising that the Maragoli do not distinguish between this lizard and the serpentiform *Riopa anchietae,* when chided about it they replied "Why should we? We don't eat them."

Variation. Midbody scale-rows 26 in the plateau specimens, 22 in the skink from the coastal plain. This is a new low number, the range heretofore being 24–28, our other coastal material is normal.

Coloration. Two of the three Kaimosi females have a lineolate appearance below, this results from the longitudinal sutures of the breast and belly scales being plumbeous, the third female is uniformly white beneath.

Breeding. These two largest Kaimosi females, measuring 73 mm. from snout to anus, are gravid, holding ten and eleven embryos respectively, these were fully formed and with very little yolk remaining.

Diet. Stomachs examined, held (1) cricket, (2) cricket and spider, (3) spider, (4) two isopods in the Malindi skink.

Mabuya quinquetaeniata obsti Werner

Mabuia obsti Werner, 1913, Mitt. Nat. Mus. Hamburg, **30**, p. 43: Kwa Mtoro, Central Province, Tanganyika Territory.

Mabuia quinquetaeniata hildebrandti Sternfeld (not of Peters), 1917, Wiss. Ergebn. Zwei, Deutsch. Zent.-Afrika-Exped. 1910–1911, **1**, p. 438, pl. xxiv, fig. 3: Taita, Kenya Colony.

Intermediates

1 (M. C. Z. 41338) Kacheliba, U. 8.xi.33.
4 (M. C. Z. 41339–42) Karita River, U. 9.xi.33.
1 (M. C. Z. 41343) Nabagut, Greeki R., U. 6.xii.33.
1 (M. C. Z. 41344) Elgonyi, K. C. 22.i.34.

Typical *obsti*

3 (M. C. Z. 41345–7) Tsavo, K. C. 30.iii.34.
45 (M. C. Z. 41348–79) Mt. Mbololo, K. C. 16–26.iv.34.

Distribution. Skinks from Ethiopia, northern Uganda, and northern Kenya are intermediate between typical *quinquetaeniata* of Egypt and the Sudan and the larger tropical race *obsti* which I now recognize for the first time as a result of studying the long series of topotypic *hildebrandti* from Mbololo in Taita. These intermediates agree with typical *quinquetaeniata* in the number of midbody scale-rows, but with *obsti* in the immaculate throat of the male.

Native names. Longisia (Kimasai); *malasagasa* (Kitaita, but not specific).

Variation. (Intermediates) Midbody scale-rows 36–40, average 38.1; prefrontals in contact in eight skinks, separated in two; supraciliaries 5–6, average 5.6; supralabials anterior to subocular 4.

(Typical *obsti*) Midbody scale-rows 42–48, average 44.2; prefrontals in contact in twenty-four skinks forming a X with frontal and frontonasal in two, separated in twenty-two; supraciliaries 5–7, average 6.2; supralabials anterior to subocular 4, except on one side in three skinks which have 5; the subocular of one skink is not larger than the adjacent labials.

It might be remarked that in the fifty-eight Egyptian skinks counted by Anderson (1898, pp. 187–193) the range of midbody scale-rows is 35–42, average 37.6.

Measurements. The largest ♂ (M. C. Z. 41357) measures 252 (101 + 151) mm., the largest ♀ (M. C. Z. 41379) measures 239 (97 + 142) mm.

Breeding. The only gravid ♀ was one from Mount Mbololo which held 7 eggs measuring 17 x 9 mm.

Diet. Stomachs examined, held: (1) termites and ants, (2) termites and ants, (3) termites, ants and grasshopper, (4) termites, grasshopper, beetle and millipede, (5) termites and caterpillar, (6) grasshopper, (7) large orthopteran, (8) cricket, (9) cricket, (10) cricket.

Parasites. Nematodes (gen. et sp. n.) were present in skinks from Karita River and Mount Mbololo.

Habitat. Like the hyrax, this skink depends on rocky outcrops which restrict its distribution. At Kacheliba, Elgonyi and Mbololo they were on kopjes, along the Karita, Greeki and Tsavo Rivers among exposed rocks.

Mabuya varia varia (Peters)

(Plate 8, fig. 1)

Euprepes (*Euprepis*) *varius* Peters, 1867, Monatsber. Akad. Wiss. Berlin, p. 20: Tete, Mozambique.

6 (M. C. Z. 41380–3) Above Sipi, U. 7,000 ft. 14.xii.33.
77 (M. C. Z. 41384–449) Kaburomi, U. 10,000 ft. 28–31.xii.33.
7 (M. C. Z. 41450–3) Madangi, U.11,500 ft. 3–4.i.34.
2 (M. C. Z. 41454) Kibwezi, K. C. 2,985 ft. 23.iii.34.
6 (M. C. Z. 41455–8) Mt. Mbololo, K. C. 4,000 ft. 16.iv.34.
1 (M. C. Z. 41459) Gongoni, K. C. 200 ft. 27.vi.34.

Natives names. *Kikunya* (Lugishu); *malasagase* (Kitaita, but not specific).

Variation. The long series from the alpine zone of Mount Elgon, were collected as they seemed to me to be different from those with which I was familiar at lower levels. Apart from smaller size, however, critical examination in the laboratory has failed to reveal any character which may not be matched sometime by a skink from lower levels. In this connection see also the remarks on coloration. The following statistics while revealing the variation in the whole series, apply equally well both in range and average number of scale-rows to the montane (7,000 to 11,500 feet) group alone, nor do the latter exhibit any variation in these characters, except for carination as noted, which is not shared by the small series from lower levels.

Midbody scale-rows 30–34, average 32.1, *except* for the coastal (Gongoni) specimen which has only 28 rows, the first record of so low a number; scales tricarinate in all except three Mbololo skinks in which a few scales are quattuor- or quinquecarinate; prefrontals in contact in 11 skinks, forming an X with frontal and frontonasal in two, separated in seventy-seven; frontoparietals distinct; subocular bordering lip in all.

Coloration. That of adult (not young) males from Sipi is suffused with rufous on the flanks both above and below the lateral line; below they are bright mustard yellow from nape to anus, almost all the gular, and in some specimens the ventral and subcaudal scales as well, are edged with black.

At Kaburomi, I was impressed by the striking resemblance in dorsal markings and coloration which these skinks bore to *Algiroides alleni* whose habitat and habits seemed similar, below, however, *alleni* was bright reddish orange.

The dorsolateral line in the montane specimens was reduced to hair-like proportions, in typical specimens it is ribbon-like, forming a white band almost a scale wide. At Kibwezi, however, the band is lacking and I noted in the field that the coloration was "quite black," the skink being shot while basking on the black lava which covers so much of the countryside in the vicinity of the station.

Measurements. Of the montane lizards, the largest ♂ (M. C. Z. 41412) measures 133 (52 + 81) mm., and largest ♀ (M. C. Z. 41398) 141 (63 + 78) mm., being about 10 mm. less in length from snout to anus than large lowland skinks.

Breeding. Very many of the Kaburomi females are gravid; of half-a-dozen dissected one held 8 ova measuring about 8 mm. in circumference, the rest had from 4 to 6 embryos in every stage of development. A Kibwezi skink held embryos almost ready for parturition. One female in the Mbololo series was gravid, its ova being in about the same stage of development as those of the Kaburomi skink with 8 eggs.

Diet. Stomachs examined, held: (1) beetle, (2) beetle, hemipteron, caterpillar, (3) cricket, spider, (4) cricket and own sloughed scarf-skin.

Parasites. Nematodes (*Thubunaea asymmetriea*), and a new genus and species, were common in the Kaburomi skinks.

Enemies. Augur Buzzards, harriers and kestrels were seen, both at Kaburomi and Madangi, quartering over the alpine meadows where these skinks appeared to be the dominant form of vertebrate life. There were five skinks in the stomachs of one buzzard (*Buteo r. augur*), and one in another, shot at Kaburomi; one skink in a kestrel (*Falco t. tinnunculus*) shot near Madangi.

It was interesting to note that only two of these seven skinks had dropped their tails when captured, that the little creatures live a hazardous life in these uplands is obvious from the fact that the great majority of the ninety collected had reproduced tails: the latter may be distinguished by their having single transversely enlarged scales below, instead of the numerous small scales present on the original portion.

Habitat. Astonishingly abundant in the alpine meadows, these skinks behave in much the same way as does the lizard (*Algiroides alleni*), which see for further details.

Mabuya striata (Peters)

Tropidolepisma striatum Peters, 1844, Monatsber. Akad. Wiss. Berlin, p. 36: Mozambique.

3 (M. C. Z. 41461–2) Mt. Debasien, U. 16.xi.33.
1 (M. C. Z. 41463) Sabei, Elgon, U. 9.xii.33.
1 (M. C. Z. 41464) Sipi, Elgon, U. 27.xii.33.
2 (M. C. Z. 41465) Butandiga, Elgon, U. 8.i.34.
5 (M. C. Z. 41466–8) Kirui's, K. C. 19.i.34.
5 (M. C. Z. 41469–71) Kaimosi, K. C. 10.ii.34.
2 (M. C. Z. 41472) Mt. Mbololo, K. C. 17.iv.34.

2 (M. C. Z. 41473) Lamu Island, K. C. 7.v.34.
1 (M. C. Z. 41474) Mombasa Id., K. C. 3.vii.34.

Distribution. Seen also at Kitale, Nabagut and Molo.

Native names. *Lamatwan* (Karamojong); *matundi* (Lugishu); *longisia* (Kimasai); *lisiagali* (Luragoli); *lisiakali* (Lutereki); *malasagasa* (Kitaita, but not specific); *jumbakoka* (Kiamu).

Variation. Midbody scale-rows 34–40 for Debasien series alone, or exclusive of Debasien series; keels 3–7, an age character as young have only three, subsidiary keels, usually faint but sometimes strongly developed, appear in older skinks; prefrontals in contact in three skinks, separated in nineteen; frontoparietals distinct except in a Lamu skink where fusion has almost certainly resulted from an injury when young.

Measurements. The largest skink, a ♂ (Lamu), measures 208 (93 + 115) mm., but the tip of its tail is missing; the largest ♀ (M. C. Z. 41466) measures 93 mm. from snout to anus but the tail is regenerating.

Breeding. On January 8, a ♀ from Butandiga held 6 spherical ova about 7 mm. in diameter; on January 19, one ♀ from Kirui's village held 6 ova about 8 mm. diameter, while another had 6 very young embryos; on February 10, a ♀ from Kaimosi had 6 large, but unpigmented, embryos.

Diet. Two skinks held beetles, two termites, two a grasshopper each, while one held a cockroach and snail, the shell of the latter gone.

Parasites. A nematode was recovered from only one stomach out of ten examined.

Enemies. Striped skinks were recovered from the stomachs of a hawk (*Melierax m. metabates*) on Debasien, a wolf snake (*Lycophidion c. capense*) and a green snake (*Chlorophis hoplogaster*) at Sipi, and from the latter species only at Kaimosi.

Habitat. In miombo bush on Debasien, where it ascends trees and behaves like *maculilabris*, all three were shot on trees; elsewhere chiefly obtained on the walls of rest camps or native huts. The Sipi skink lived for several days in the tent, apparently sleeping in the tent pockets. The tent was struck at night. Several days after our arrival at Kaburomi, where the species does not occur, its flattened tailless body was found in one of the tent pockets.

Mabuya irregularis Lönnberg

(Plate 8, fig. 2)

Mabuia (*striata* ? *var.*) *irregularis* sp. n. ? Lönnberg, 1922, Arkiv for Zoöl., **14**, p. 4: Soy, Kenya Colony.

♀ (M. C. Z. 41460) Kaburomi, 10,500 ft., U. 28.xii.33.

Distribution. Though only about forty miles northwest of the type locality, this record not only constitutes the first occurrence of this montane form on Mount Elgon, but an addition to the herpetofauna of Uganda. Formerly known from Mount Kenya and the Aberdare Range.

Variation. Midbody scale-rows 34; supraciliaries 4; parietals *separated* posteriorly by the interparietal, each parietal shield bordered by 4 scales only 1 of which is enlarged so that there is but a single pair of nuchals enlarged.

Measurements. This ♀ measures 150 (75 + 75) mm.

Breeding. Five scaled and pigmented embryos, within about a week of parturition, display the most astonishing variation in development. Of three measured, one is 64 (31 + 33) mm., another 66 (29 + 37) mm., and the third 47 (23 + 24) mm.

Diet. The stomach held two species of weevil, an ant (probably *Pheidole* sp.), two parasitic hymenoptera (*Proctotrypidae*), two caterpillars and two species of spiders. I am indebted to Dr. Joseph Bequaert for these identifications.

Parasites. Nematodes (*Thubunaea asymmetrica*) present in the stomach.

Riopa mabuiiformis Loveridge

Riopa mabuiiformis Loveridge, 1935, Bull. Mus. Comp. Zoöl., **79**, p. 12: Ngatana, Tana River, Kenya Colony.

11 (M. C. Z. 40266–71) Ngatana, Tana River, K. C. 14–19.vi.34.

These are the type and paratypes of a smooth-scaled species with 28 to 30 midbody scale-rows.

Native name. Lukumvivi (Kipokomo for all three species of Riopa occurring in this locality).

Diet. Stomachs examined, held: (1) large black cricket and own slough, (2) both items as in one, (3) grasshopper.

Habitat. Taken beneath vegetable debris heaped on raised banks separating the flooded rice-fields just north of the grove of mango trees.

Riopa tanae Loveridge

Riopa tanae Loveridge, 1935, Bull. Mus. Comp. Zoöl., **79**, p. 11: Kau, near the mouth of the Tana River, Kenya Colony.

14 (M. C. Z. 40251–9) Kau, Tana River, K. C. 4.vi.34.
1 (M. C. Z. 40261) near Witu, north of Kau, K. C. 31.v.34.
2 (M. C. Z. 40264–5) Ngatana, Tana R., K. C. 19.vi.34.
2 (M. C. Z. 40262–3) Golbanti, Tana R., K. C. 23.vi.34.

These are the type and paratypes of a smooth-scaled species with 22 to 24 midbody scale-rows. Native name as for last species.

Breeding. Most, or all, of the adult females in the series from Kau were gravid, holding from 2 to 3 ova or embryos, some of the latter were fully formed, furnishing evidence that the species is viviparous. On June 23, a Golbanti female held 3 eggs measuring 9 x 5 mm.

Diet. Crickets were definitely present in two skinks but the food was so well masticated in the other specimens examined that it was indeterminable.

Riopa sundevallii (Smith)

Eumices (*Riopa*) *sunderallii* A. Smith, 1849, Illus. Zoöl. South Africa, **3**, App., p. 11: Natal.

2 (M. C. Z. 41475–6) Mt. Debasien, U. 22.xi.33.
1 (M. C. Z. 41477) Sipi, Mt. Elgon, U. 12.xii.33.
2 (M. C. Z. 41478–9) Kibwezi, K. C. 23.iii.34.
29 (M. C. Z. 41480–99) Voi, K. C. 7–12.iv.34.
2 (M. C. Z. 41500) Mt. Mbololo, K. C. 17.iv.34.
9 (M. C. Z. 41501–7) Lamu Id., K. C. 5.v.34.
1 (M. C. Z. 41508) Mkonumbi, K. C. 28.v.34.
2 (M. C. Z. 40260, 41509) Witu, K. C. 31.v.34.
20 (M. C. Z. 41510–23) Ngatana, K. C. 12–19.vi.34.
1 (M. C. Z. 41524) Golbanti, K. C. 22.vi.34.
2 (M. C. Z. 41526) Malindi, K. C. 29.vi.34.
2 (M. C. Z. 39967–8) Sokoki Forest, K. C. vi.32. H.J.A.T.

Native names. Kilimagonde (Kitaita, but not specific); *kiumambusi* (Kiamu); *lukumviri* (Kipokomo).

Variation. Midbody scale-rows 24–28, only one Debasien and two Mbololo skinks with 28, average 25; rostral separated from frontonasal except in three Ngatana skinks which agree with *productum* Boulenger in this respect; frontonasal broader than long except in three skinks (M. C. Z. 41498–9, 41526) where it is longitudinally divided; prefrontals and frontoparietals distinct; nostril between supranasal and two smaller nasals except in one Ngatana skink where the two nasals are fused into a single scale on the right side only; second toe well in advance of fifth.

Coloration in life. Halfgrown specimens at Voi were noted as being plumbeous, or black, above; light below. The throat of an adult Ngatana male was a beautiful lemon-yellow color.

Measurements. The largest ♂ (M. C. Z. 41481) measures 193 (122 + 71) mm., but his tail is regenerated; the largest ♀ (M. C. Z. 41480) measures 225 (118 + 107) mm.

Breeding. In mid-June, at Ngatana, one skink held 4 eggs measuring approximately 13 x 7 mm., another held eggs 18 x 9 mm. On June 19, I came upon six eggs measuring 19 x 11 mm. in a cavity in a large termitarium, situated at the edge of a rice-swamp; many adult skinks were disturbed and captured during the process of demolishing the termites' hill. On July 4, four of these eggs were found to have hatched, the emerged young measuring 62 (24 + 38) mm.

Diet. Stomachs examined held: (1) caterpillar, (2) grasshopper, (3) grasshopper and hemipteron of the Thyreocoridae, (4) beetle larvae, (5) termites, (6) minute snails, (7) sandhopper at Lamu.

Enemies. Sundevall's skinks were recovered from the stomach of a wolf snake (*Lycophidion c. capense*) at Kibwezi, and a burrowing viper (*Atractaspis bibronii*) at Chamgamwe. One Ngatana skink had no digits on the hind limbs, the right fore limb had a bud, while stumps of digits remained on the left fore limb.

Riopa modestum modestum (Günther)

Sepacontias modestus Günther, 1880, Ann. Mag. Nat. Hist. (5), **6**, p. 235: Mpwapwa, Ugogo, Tanganyika Territory.

5 (M. C. Z. 41527–30) Tsavo, K. C. 3.iv.34.
19 (M. C. Z. 41531–45) Voi, K. C. 7–13.iv.34.
5 (M. C. Z. 41546–50) Mt. Mbololo, K. C. 23–29.iv.34.

Relationships. Recently, Parker (1932, pp. 357–361) has thrown considerable light on the tangled status and synonymy of the northeast African skinks of this group, further he has provided a really excellent and workable key.

At the time of its appearance, I had some manuscript in hand in which I adduced reasons for regarding *modestum* as a race of *sundevallii*, and let this go to press (1933, p. 322) rather than reinvestigate the whole business. I am now entirely convinced that Parker's arrangement is the correct one and that I was wrong in laying such emphasis on the abnormal individuals which I regarded as intermediates. Further proof is now furnished by the fact that both *sundevallii* and *modestum* occur together at Voi and Mbololo.

Variation. Midbody scale-rows 24–27, average 24.6, definitely less than in Tanganyika Territory material; rostral separated from frontonasal; prefrontals distinct; nostril between a supranasal and postnasal only; second toe well in advance of the fifth.

Coloration in life. The males at Voi were a beautiful lemon-yellow shade below, similar to the throat of a male *sundevallii*.

Measurements. None exceeded measurements previously given for this species, several had a snout to anal length of 80 mm., their tails being regenerated.

Breeding. In early June most of the Voi females held 2, rarely 3, developing ova; of these one pair measured 5 mm. in diameter, two pairs 7 mm., and a fourth lot of three eggs 13 x 6 mm.

Diet. Stomachs examined held: (1) caterpillar, (2) grasshopper, (3) grasshopper and earwig, (4) cricket, (5) termites.

Habitat. As Tsavo is the type locality of *Lygosoma gromeri*, I made an especial attempt to secure skinks of this group. I captured a female *modestum* beneath a heap of tanning bark that had been lying abandoned for years. Putting it in a test-tube, I sent it round to the few natives attached to this isolated station. An Mtaita brought in three which he had hoed up in his garden, unfortunately all had lost their tails as he was afraid of them. I do not think that *gromeri* is an aberrant *modestum*, it seems to be a Siaphos with a divided fronto rostral, otherwise near *kilimensis*. It should be looked for on the highest kopjes near Tsavo, where forest may have existed in past centuries.

Riopa pembanum (Boettger)

Lygosoma (*Riopa*) *pembanum* Boettger, 1913, in Voeltzkow, Reise in Ost-Afrika, **3**, p. 350, pl. xxiv, figs. 4–5: Pemba Island.

1 (M. C. Z. 39969) Sokoki Forest, K. C. (H.J.A.T.) vi.32.

Distribution. Parker (1932, p. 361) was the first to record this skink from the African mainland, this addition to the Kenya fauna being based on two skinks in the British Museum from Takaungu which lies between the Sokoki Forest and Pemba Island. It occurs with *sundevallii* at Sokoki, has 24 midbody scale-rows and the prefrontals lacking, being fused with the frontonasal.

Riopa anchietae (Bocage)

(Plate 7, fig. 2)

Eumecesa anchietae Bocage, 1870, Jorn. Sci. Lisboa, **3**, p. 67, pl. i: Huilla Plateau, Mossamedes, Angola.

1 (M. C. Z. 41551) Kirui's Village, K. C. 23.i.34.
27 (M. C. Z. 41552–71) Kaimosi, K. C. 10–28.ii.34.

Native name. *Luhuyu* (Luragoli and Lutereki).

Variation. Midbody scale-rows 22–26, only M. C. Z. 41558 with 22 and M. C. Z. 41563 with 26; fingers 2, toes 3, except for a few skinks which appeared to have lost their digits azygously by accident, for example M. C. Z. lacks the right fore limb while its right hind limb is devoid of digits.

Measurements. The largest perfect ♂ (M. C. Z. 41551) measures 492 (171 + 321) though surpassed in body length by many in the Kaimosi series which have regenerating tails.

Breeding. In mid-February four Kaimosi females held from 4 to 8 embryos, the highest number being in the largest female, which ranged from very minute embryos to fully formed and pigmented skinks measuring 128 (52 + 76) mm.

Diet. Stomachs examined held: (1) to (5) grasshoppers, (6) grasshopper, caterpillar, termites and a millipede, (7) cockroach and its egg-case, caterpillar, weevil, (8) beetles, moth, (9) grasshopper, wasp, (10) large spider. In addition two of these skinks had a mass of their own sloughed scales in their stomachs.

Siaphos kilimensis (Stejneger)

Lygosoma kilimensis Stejneger, 1891, Proc. U. S. Nat. Mus., **14**, p. 405: Kilimanjaro, Tanganyika Territory.

Lygosoma clathrotis Boulenger, 1900, Ann. Mag. Nat. Hist. (7), **6**, p. 194: Foot of Mount Kenya, Kenya Colony.

3 (M. C. Z. 41572–4) Voi, K. C. 10.iv.34.
15 (M. C. Z. 41575–85) Mt. Mbololo, K. C. 16–26.iv.34.

Distribution. I am a little doubtful of the data of the Voi material, it is possible that I collected them along the Voi River and confused them in the field with *Riopa m. modestum* to which they bear so strong a resemblance in coloration and habit, though not in habitat. Alternatively they may have been brought in to my Voi camp by a native who may possibly have secured them on one of the neighbouring hills.

Native name. *Kilimagonde* (Kitaita, but not specific).

Affinities. Boulenger referred his *clathrotis* to the section Liolepisma. I have reëxamined the specimen from Nairobi River (U. S. N. M. 42517) which I referred to *clathrotis* (1929, p. 78) and find it indistinguishable from *kilimensis*. It is true that the type of *clathrotis* was

said to have 22 midbody scale-rows but, though rare, skinks with this number occur alongside those with 24 on Mbololo. Moreover Dr. Malcolm Smith informs me that he has reëxamined the type of *clathrotis* and finds it had 24 (not 22) midbody scale-rows. He confirms my action in referring *clathrotis* to the synonymy of *kilimensis*.

Variation. Midbody scale-rows 22–24, all but two with 24; lamellae under fourth toe 12–15; limbs pentadactyle.

Measurements. The largest ♂ (M. C. Z. 41577) measures 173 (72 + 101) mm., the largest ♀ is 2 mm. less in length from snout to anus, tail regenerated.

Breeding. Only two of the females are gravid. On April 16, I found 24 eggs, each measuring about 14 x 8 mm., beneath a single log in the forestry nursery at the edge of the rain forest. The eggs contained young skinks some of which were found to measure 49 (23 + 26) mm. It was difficult to say how many eggs constituted a clutch as most were scattered about, one group, however, well separated from the rest, comprised four eggs which agrees with the number previously recorded by Barbour & Loveridge (1928, p. 163) as found in a gravid female in the Uluguru Mountains. In addition to the 24 fresh eggs, there were many others which had hatched out and appeared to have belonged to a previous breeding season.

Returning to the forestry nursery on the following day, April 17, I uncovered 68 more fresh eggs of which about 50 were found under one log. This log was favourably situated on the east side of the nursery close to the western edge of the rain forest where the sun would not reach it until noonday. In the loose soil adjacent to the eggs, five adult skinks were taken of which two were gravid and had presumably come to this spot to lay. It should be remarked that there were an abundance of logs lying along the forest edge yet the skinks had concentrated their laying under a few. The finding of these eggs appears to point to a definite breeding season. Hatched-out shells from a previous season were present beneath this log also.

On April 23, two of the eggs hatched out skinks which measured 58 (26 + 32) and 56 (26 + 30) mm. respectively. On April 26, two more hatched. I then packed all the eggs in appropriate soil and mailed them to the London Zoological Gardens, but they did not hatch.

Diet. Stomachs examined, held: (1) spider, (2) spider and caterpillar, (3) spider and hymenopteran, (4) spider and woodlouse, (5) caterpillar.

Parasites. Nematodes (gen. et sp. n.) were present in the stomach of one lizard.

Enemies. One of these skinks was recovered from the stomach of a house snake (*Boaedon lineatus*) which I found in the hollow log beneath which so many eggs were located on April 17. The house snake was only halfgrown, the skink was a very large one.

Habitat. These skinks were in the habit of basking on sunlit patches beside the paths which penetrated the forest, others were captured at the base of wild banana plants in the forest.

Ablepharus boutonii africanus Sternfeld

Ablepharus boutoni africanus Sternfeld, 1918, Abh. Senckenb. Nat. Ges., **36,** p. 423: Manda Id., Malindi and Pemba Id.

3 (M. C. Z. 41586–7) Lamu Id., K. C. 12.v.34.
10 (M. C. Z. 41588–95) Kitau, Manda Id., K. C. 15.v.34.
6 (M. C. Z. 41596–600) Malindi, K. C. 30.vi.34.

Distribution. The Kitau and Malindi series are topotypes of this race.

Variation. Midbody scale-rows 22–24, average 22.7.

Measurements. The largest ♂ (M. C. Z. 41593) measures 107 (44 + 63) mm., the largest ♀ (M. C. Z. 41595) measures 111 (45 + 66) mm.

Breeding. In mid-May, three females on Lamu and Manda Islands each held two eggs measuring 12 x 5 mm., at the latter locality one held a pair of eggs measuring 7 x 4 mm., another had small ova. At Malindi breeding appeared to be over on June 30.

Diet. The stomachs of ten specimens examined held remains of minute insects (nymphal orthopterans ?) and crustacea too masticated to be identifiable except for a cockroach and beetle.

Habitat. These littoral skinks were very common on the rocks forming the breakwater along the sea front by the wireless station on Lamu Island. They were presumably introduced with the rock as all rock on Lamu has been imported by dhow.

Abundant on the rock masses scattered along the shore near Ras Kitau, where they appear to be feeding more on insects than is the case at Mombasa. These specimens were killed with dust shot from .22.

At Malindi they were plentiful on the coral cliffs at the extreme south end of the bay, about a mile south of the township. Naturally they do not occur elsewhere in the sandy bay or near the town. My ammunition being exhausted, I armed myself with a towel and pair of long forceps. The towel should be rolled up lengthwise and the two

ends held in the hand. Having approached within striking distance, a sudden blow is given with the soft towel, this usually only disconcerts the skink, at most stunning it momentarily so that it is necessary to pounce upon the reptile with all possible speed. If it has fallen, or slipped into one of the numerous fissures, the forceps will be found invaluable for recovering the little reptile without injuring its tail.

Ablepharus wahlbergii (Smith)

Cryptoblepharus wahlbergii Smith, 1849, Illus. Zoöl. S. Africa, **3**, App. p. 10: Natal.

Ablepharus carsonii Boulenger, 1894, Proc. Zoöl. Soc. London, p. 735, pl. xlix, figs. 4–4a: Fwamba, Northern Rhodesia.

Ablepharus massaiensis Angel, 1924, Bull. Mus. Hist. Nat. Paris, p. 52: Masai Plains near Nairobi, Kenya Colony.

23 (M. C. Z. 41601–10, 41614–7) Kaimosi, K. C. ii.34.
1 (M. C. Z. 41611) Voi, Coast Province, K. C. 9.iv.34.
1 (M. C. Z. 41612) Golbanti, Tana R., K. C. 2.v.34.
1 (M. C. Z. 41613) Lamu, Lamu Island, K. C. 5.v.34.

Native name. *Lisiakali* (Lutereki, but not specific). The Watereki natives who gave me this name believed this little skink to be the young of *Mabuya striata.* When the difference was pointed out, they still maintained that *lisiakali* was the only name that they had for it, and asked what reason was there that they should have another seeing that it was not good to eat.

Synonymy. *A. carsonii* was differentiated from *wahlbergii* because of the fusion of the frontoparietals with the interparietal to form a single large shield. Four of the skinks in the Kaimosi series agree with *carsonii* in this respect and others from this locality show intermediate conditions of parietal fusion. *A. carsonii* was based on a single specimen which I must assume was an aberrant individual.

The aberration is, however, of major importance as it throws such individuals into the first section of Boulenger's (1887, p. 344) key. So important a variation should not be lost sight of. It will be observed that the head shields of this species are subject to considerable fusion.

Variation. Midbody scale-rows 22–26, average 23.8; frontoparietals and interparietal fused to form a single shield (as in *carsonii* and *boutonii*) in four skinks (M. C. Z. 41614–7), the frontoparietals are fused but interparietal distinct (*i.e.* like *wahlbergii*) in the rest of the series except for a few where the separation is ill-defined; prefrontals separated except in M. C. Z. 41601 in which the left pre-

frontal is fused with the frontal, and M. C. Z. 41616 where they are in contact; supraoculars 3 (*wahlbergii*) except in two skinks which have 3–2 and two others which have only 2 (*massaiensis*) as the result of fusion.

Measurements. The largest is a ♀ (M. C. Z. 41608) measuring 131 (53 + 78) mm.

Breeding. Between February 17 and 28, most of the Kaimosi females appear to be gravid, three examined held 4, 5, and 6 eggs respectively, the lots measuring approximately 3 x 5, 4 x 4 and 4 x 8 mm. A young skink, presumable nearly a year old, measured 44 (19 + 25) mm.

On May 5, at Lamu, several skinks were seen among the fallen leaves which blanketed the sand about the base of an old mango tree. One egg was found beneath the leaves, it contained an embryo measuring 13 mm. from snout to anus, the tail tip now missing.

Diet. Stomachs examined, held: (1) termites, (2) termites, (3) three termites and four spiders, (4) a beetle and apparently a beetle larva.

Enemies. A Wahlberg's Skink was recovered from the stomach of a Cape Wolf Snake (*Lycophidion c. capense*) at Kaimosi.

Habitat. The Voi skink was taken among the crumbling ruins of a native hut on the Msinga Estate.

Acontias percivali Loveridge

Acontias percivali Loveridge, 1935, Bull. Mus. Comp. Zoöl., **79**, p. 13: Foot of Mount Mbololo, Taita Mountains, Kenya Colony.

39 (M. C. Z. 40175–200) Mt. Mbololo, K. C. 26–30.iv.34.

Distribution. The majority of these, the type series, came from Kitibu at the west, or northwest foot of the mountain.

Breeding. No signs of it in fifteen specimens examined.

Diet. Stomachs examined, held: (1) termites, (2) termites, (3) termites and ants, (4) ants' heads, (5) beetle, (6) beetle, (7) beetle larva, (8) beetle larva, (9) hairy caterpillar, (10) caterpillars and small cricket, (11) millipede. In addition two skinks had their own sloughs in stomach or intestines and many had much sandy soil of the district, apparently ingested with food.

Parasites. Nematodes (*Thelandros sp. n.*) were present in the intestines of three of the largest specimens examined.

CHAMAELEONTIDAE

Chamaeleon senegalensis Daudin

Chamaeleo senegalensis Daudin, 1802, Hist. Nat. Rept., **4**, p. 203: Region watered by the Senegal and Niger Rivers; Gambia and Guinea.
Chamaeleon laevigatus Gray, 1863, Proc. Zoöl. Soc. London, p. 95: 500 miles south of Khartoum, Anglo-Egyptian Sudan.

1 (M. C. Z. 41618) w. foot of Mt. Debasien, U. 16.xi.33.
4 (M. C. Z. 41619–22) Lukungu, w. foot Mt. Elgon, U. 8.i.34.
13 (M. C. Z. 41623–32) Bukori, s. foot Mt. Elgon, K. C. 18.i.34.

Native name. *Agiar* (Karamojong, but not specific).

Synonymy. Dr. H. Heckenbleikner, in his forthcoming monographic revision of the genus, can find no grounds for regarding *laevigatus* (hitherto applied in a subspecific sense to East African specimens) as distinct from *senegalensis*.

Measurements. The largest ♂ (M. C. Z. 41619) measures 184 (108 + 76) mm., the largest ♀ (M. C. Z. 41623) measures 170 (105 + 65) mm.

Breeding. On January 8, the two females from Lukungu were gravid with 14 eggs measuring 6 mm. diameter, and 7 eggs measuring 7 mm. diameter respectively. On January 18, however, half-a-dozen females from Bukori exhibit undeveloped ova. The difference may be explainable by prolonged drought at Bukori?

Diet. Stomachs examined, held: (1) beetles, (2) flies, (3) ants?, (4) ants?, (5) grasshopper.

Habitat. The Debasien specimen was found clinging to some stout grass in an area swept over by grass fires the previous day though somewhat patchily burnt.

Chamaeleon gracilis gracilis Hallowell

Chamaeleo gracilis Hallowell, 1842, Journ. Acad. Nat. Sci. Philad., p. 324, pl. xviii: Monrovia, Liberia.

1 (M. C. Z. 41633) Mt. Debasien, 5,000 ft., U. 24.xi.33.
3 (M. C. Z. 41634–6) Lukungu, w. foot Mt. Elgon, U. 8.i.34.
26 (M. C. Z. 41637–69) Bukori, s. foot Mt. Elgon, K. C. 18.i.34.

Native name. *Agiar* (Karamojong, but not specific).

Measurements. The largest ♂ (M. C. Z. 41637) measures 209 (105 + 104) mm., the largest ♀ (M. C. Z. 41638) measures 249 (135 + 114) mm.

Sexual dimorphism. Before dissection, I sorted the material into two groups, viz. those with a spur and those without. Dissection demonstrated that each of the 10 spurred specimens was a male, each of the 30 devoid of spurs proved to be a female. In no instance had the original sorting to be amended or reversed. In *C. g. etiennei* Schmidt, of Banana, Belgian Congo, the male is spurless like the female.

Breeding. The testes of the males appeared to be enlarged, the ova in all thirty females was not, or only just beginning to be, enlarged.

Diet. Stomachs examined, held: (1) four half-grown praying mantids, katydid, cockroach, *Camponotus* ant, beetle, (2) three agrionid dragonflies, numerous beetles, spider, (3) remains of several agrionid dragonflies.

Chamaeleon dilepis roperi Boulenger

Chamaeleon roperi Boulenger, 1890, Proc. Zoöl. Soc. London, p. 85, pl. viii, fig. 4: Kilifi, north of Mombasa, Kenya Colony.

29 (M. C. Z. 41670–98) Kibwezi, K. C. 25–30.iii.34.
2 (M. C. Z. 41699–700) Voi, K. C. 7–10.iv.34.
7 (M. C. Z. 41701–6) Mt. Mbololo, K. C. 17–27.iv.34.

Distribution. Also 14 from Sokoki Forest (H. J. A. T.) seen at Nairobi.

Native name. Malunge (Kitaita, but only generic).

Variation. All the males, and there are some from each locality, agree with the type in being devoid of tarsal spurs. See also remarks under *dilepis*.

Measurements. The largest ♂ (M. C. Z. 41670) measures 215 (118 + 97) mm.; the largest ♀ (M. C. Z. 41702) measures 220 (128 + 92) mm.

Breeding. Towards the end of March all the Kibwezi females appear to be gravid, one examined held 26 eggs measuring 10 mm. in diameter. A month later on Mount Mbololo, a female held 23 eggs measuring 14 x 7 mm.

Diet. Stomachs examined, held: (1) praying mantis, (2) grasshoppers.

Enemies. Roper's Chameleons were recovered from the stomach of a Lizard Buzzard (*Asturinula m. monogrammica*) at Voi, a sand snake (*Psammphis biseriatus*) and two Boomslangs (*Dispholidus typus*) on Mount Mbololo.

Chamaeleon dilepis quilensis Bocage

Chamaeleo dilepis var. *quilensis* Bocage, 1866, Jorn. Sci. Math. Phys. Nat. Lisboa, **1**, p. 59: Rio Quillo, Angola.

♂ ♂ (M. C. Z. 41707–8) Lamu Island, K. C. 7.v.34.
♂ ♀ (M. C. Z. 41709–10) Peccatoni, K. C. 24.v.34.
♀ (M. C. Z. 41711) Mapenya, K. C. 28.v.34.
♂ ♀ (M. C. Z. 41713–4) Mkonumbi, K. C. 28.v.34.

Distribution. It was a most disconcerting discovery to me to find these undoubted *quilensis* occurring in the small area about Lamu Island, for a suggested explanation see remarks under *dilepis*.

Native name. Gegeuka (Kiamu).

Variation. All the males agree with the type in having tarsal spurs and minute occipital lobes.

Measurements. The largest ♂ (M. C. Z. 41707) measures 200 (104 + 96) mm.; the largest ♀ (M. C. Z. 41711) measures 262 (135 + 127) mm.

Breeding. On May 28, the Mapenya female held 36 eggs measuring 9 x 8 mm., but about the same date the ova in both Peccatoni and Mkonumbi females was only slightly developed.

Diet. Stomachs examined, held: (1) grasshopper, (2) three grasshoppers, (3) three grasshoppers and a spider.

Chameleon dilepis dilepis Leach

Chamaeleo dilepis Leach, 1819, in Bowdich, Miss. Ashantee, App. p. 493: Gaboon.

♂ (M. C. Z. 41715) Ngatana, Tana River, K. C. 13.vi.34.

Native name. Lumvivi (Kipokomo, but not specific).

Variation. This male has tarsal spurs and relatively large occipital lobes.

Measurements. ♂ measures 194 (94 + 100) mm.

Discussion on status of the forms. The determination and distribution of the members of this group have given considerable trouble to taxonomists so that the records are in a chaotic state and the distribution appears even more inexplicable than is actually the case.

The key furnished by Boulenger (1887, p. 440) cannot be improved upon so far as it goes, but his species *parvilobus* has long been recognized as a synonym of *quilensis*; and *roperi* was undescribed at that time, having been long confounded with *quilensis* or with *dilepsi* in the literature.

Two points have to be borne in mind. Firstly, that it is usually impossible to distinguish very young specimens, for their lobes are insufficiently developed. Secondly, the females of *quilensis* are indistinguishable from those of *roperi* so that it is essential to collect males.

The following key will serve to separate the males:

Males without a tarsal process or spur on hind foot, occipital dermal lobes only slightly developed ..... *C. d. roperi*

Males with a tarsal process or spur on hind foot

Adults (and the young) with occipital dermal lobes only just movable ..... *C. d. quilensis*

Adults (but not young) with occipital dermal lobes well developed flaps ..... *C. d. dilepis*

In view of the fact that Madagascar and East Africa form the centre of distribution of the Chamaeleontidae, it is suggested as a working hypothesis to explain the somewhat anomalous distribution of these forms, that *C. d. roperi* formed the parent stock.

Its distribution, so far as we know, extends from Kilifi (its type locality) and Mombasa on the coast, inland to Kilimanjaro and north through Voi, Mount Mbololo, Mtito Andei and Kibwezi to Fort Hall, Meru and Mount Jombeni, just north of Mount Kenya. In addition, however, we must admit the occurrence of a few spurless males in a series of spurred males from Ifakara, near Mahenge, southeast Tanganyika Territory. The several Somaliland records should be rechecked.

Assuming that *quilensis* was an offshoot of *roperi*, the former must have been the dominant form over the greater part of Africa till *dilepis* developed, possibly in the Mozambique-Southwest Tanganyika-Rhodesia region where we find chameleons today with occipital lobes of intermediate size. Formerly I (1933, p. 331) referred these to *quilensis* but now consider them to be nearer to typical *dilepis* though admittedly occupying an intermediate position.

The typical form of *dilepis* appears to reach its maximum size and best development of occipital lobes in Central Tanganyika but it has pushed out westwards till it occupies the greater part of Central Africa while *quilensis* occurs on the periphery of its range.

With typical *dilepis* occurring on the Tana River between the ranges of *roperi* and *quilensis*, and with *quilensis* and *roperi* persisting in the Iringa-Ifakara country, it seems quite possible that the study of more extensive material may show the position to be even more involved than appears at present. At some not too distant date I hope to investigate and revise all the East African records in the literature.

Chamaeleon bitaeniatus bitaeniatus Fischer

(Plate 9, fig. 1)

Chamaeleo bitaeniatus Fischer, 1884, Jahrb. Hamb. Wiss. Anst., **1**, p. 23, pl. ii, fig. 7: Masailand, East Africa.

7 (M. C. Z. 41715–21) Bukori, K. C. 18.i.34.
52 (M. C. Z. 41722–50) Kaimosi, K. C. 7–28.ii.34.

Native name. *Invambu* (Luragoli and Lutereki).

Measurements. The largest ♂ (M. C. Z. 41744) measures 143 (78 + 65) mm., the largest ♀ (M. C. Z. 41724) measures 148 (92 + 56) mm.

Breeding. On January 18, at Bukori, all six females were gravid with spherical eggs, these numbered 11, 12, 13, 16, 17 and 20 respectively and all were about 7 mm. in diameter. In mid-February at Kaimosi, most females appeared gravid with eggs bearing well-formed embryos, one lot numbered 13 eggs measuring 9 x 10 mm.

Diet. Stomachs examined held: (1) flies and a stick insect, (2) flies and a caterpillar.

Enemies. Four of these chameleons were recovered from the stomachs of three Boomslangs (*Dispholidus typus*) at Kaimosi. On February 25, as I was standing beneath a very tall tree in camp, two adult male chameleons fell fighting at my feet. They were green as they landed, turned very dark, separated, then hastily strode to the trunk of the tree and reascended its rough bark. Two chameleons from this locality had truncated tails, one a mere stump.

Chamaeleon bitaeniatus höhnelii Steindachner

(Plate 9, fig. 2)

Chamaeleon höhnelii Steindachner, 1891, Sitzber. Akad. Wiss. Wien, **100**, part 1, p. 309, pl. i, fig. 2: Laikipia, Kenya Colony.

52 (M. C. Z. 41751–69) Sipi, U. 12–24.xii.33.
1 (M. C. Z. 41770) Bulambuli, U. 4.i.34.
59 (M. C. Z. 41771–95) Butandiga, U. 5–15.i.34.
4 (M. C. Z. 41796–9) Budadiri, U. 17.i.34.
2 (M. C. Z. 41800) Elgonyi, K. C. 25.i.34.

Distribution. The first four of these localities are on western Elgon between 4,000 and 9,000 feet, the last on the southern slope at about 6,000 feet.

Native name. *Ikanyafu* (Lugishu).

Measurements. The largest ♂ (M. C. Z. 41754) measures 199 (100 + 99) mm., the largest ♀ (M. C. Z. 41751) measures 190 (100 + 90) mm.; the smallest only 86 (48 + 38) mm., except for one mentioned below.

Breeding. From December 12 to January 17, almost all females held 9 to 22 eggs, or embryos, according to the size of the mother. A few held eggs only 8 mm. in diameter, but the majority consisted of large, irregular-shaped membranes containing embryos many of which had little yolk left. On January 25, at Elgonyi, a native brought in the first newly born chameleon which we had seen, it measured only 45 (25 + 20) mm.

Diet. Stomachs examined held: (1) ants, beetle, hemipteron, (2) ants, beetles, cockroach, flies, (3) flies, (4) flies and a large piece of its own scarf epidermis.

Enemies. Höhnel's Chameleons were recovered from the stomachs of four green snakes (*Chlorophis hoplogaster*) at Sipi and Butandiga, also from a Boomslang (*Dispholidus typus*) at Sipi.

Chamaeleon bitaeniatus altaeelgonis Loveridge

Chamaeleon bitaeniatus altaeelgonis Loveridge, 1935, Bull. Mus. Comp. Zoöl., **79**, p. 15: Kaburomi, 10,500 feet, Mt. Elgon, Uganda.

52 (M. C. Z. 40274–40300) Kaburomi, U. 27–28.xii.33.
2 (M. C. Z. 41801–2) Madangi, U. 3–4.i.34.

Remarks. As might be expected, this dwarf, montane race from the alpine zone of Mount Elgon, produces fewer eggs than does its larger relative, *C. b. höhnelii,* which occurs lower down the same mountain from 5,000 to 7,000 feet.

Breeding. On December 28, ten of the thirty females in the type series were examined and found to be gravid with 5, 6, 6, 7, 7, 8, 9, 9, and 10 ova of which the smallest measured 7 mm. diameter, in nine females the embryos were in various stages of development, one lot quite ready for birth.

Diet. Ten stomachs examined all held finely masticated little flies and beetles, other identifiable material was: (1) cricket, (2) cricket, grasshopper, froghopper, and (3) caterpillar.

Parasites. Nematodes (*Strongyluris ? media*) were abundant in the intestines of the type series.

Enemies. Elgon Chameleons were twice recovered from the stomachs of Augur Buzzards (*Buteo r. augur*) at Kaburomi, one bird held four.

Chamaeleon fischeri tavetensis Steindachner

Chamaeleon tavetensis Steindachner, 1891, Sitzber. Akad. Wiss. Wien, **100**, part 1, p. 310, pl. i, figs. 3–3a: Taveta Forest, south foot of Kilimanjaro, Tanganyika Territory.

Chamaeleo abbotti Stejneger, 1891, Proc. U. S. Nat. Mus., **14**, p. 353, text fig.: At 4,600 feet, Kilimanjaro, Tanganyika Territory.

♂ ♀ (M. C. Z. 41863–4) Mt. Mbololo, K. C. 17.iv.34.

Distribution. To the best of my knowledge, this species has not previously been taken in the Taita Mountains, the name "*taitensis* Steindachner" used by Stejneger (1893, p. 724) and again by Tornier (1896, p. 57) is a nomen nudum substituted for *tavetensis*.

Affinities. From its geographical position between the Nguru mountains (type locality of *fischeri*) and Meru, Mount Kenya (type locality of *C. f. excubitor*), this small form should be regarded as a race of *fischeri*.

Native name. Malunge (Kitaita, but generic).

Measurements. The ♂ measures 143 (4 + 62 + 77) mm. from end of the 4 mm. horns; the ♀ measures 121 (56 + 65) mm.

Breeding. On April 17, the female held 4 spherical ova 6 mm. in diameter.

Diet. Stomachs examined, held: (1) beetle and small grasshopper, (2) weevil, membracid, hemipteron, muscid fly and an ant.

Brookesia kerstenii kerstenii (Peters)

Chamaeleo kerstenii Peters, 1868, Monatsb. Akad. Wiss. Berlin, p. 449: Wanga (*i.e.* Vanga), near Mombasa, Kenya Colony.

♀ (M. C. Z. 41805) Voi, K. C. 10.iv.34.
♀ (M. C. Z. 41806) Mt. Mbololo, K. C. 24.iv.34.
♂ (M. C. Z. 41807) Witu, K. C. 31.v.34.
♀ (M. C. Z. 41808) Ngatana, K. C. 12.vi.34.

Native name. Lumvivi (Kipokomo, but not specific).

Coloration in life. The broad rim round the inner aspect of both upper and lower jaws was bright orange in the large female from Ngatana.

Measurements. The ♂ measures 59 (37 + 22) mm.; the largest ♀ (M. C. Z. 41808) measures 79 (55 + 24) mm.

Breeding. On April 24, on Mbololo, a female held 3 eggs about 3.5 mm. in diameter; on June 12, at Ngatana, about 6 of the ova were slightly developed to 2 mm. diameter.

Diet. Stomachs examined, held: (1) two grasshoppers, (2) grasshopper and spider, (3) two ants.

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